



# Oesophagus / Esophagus

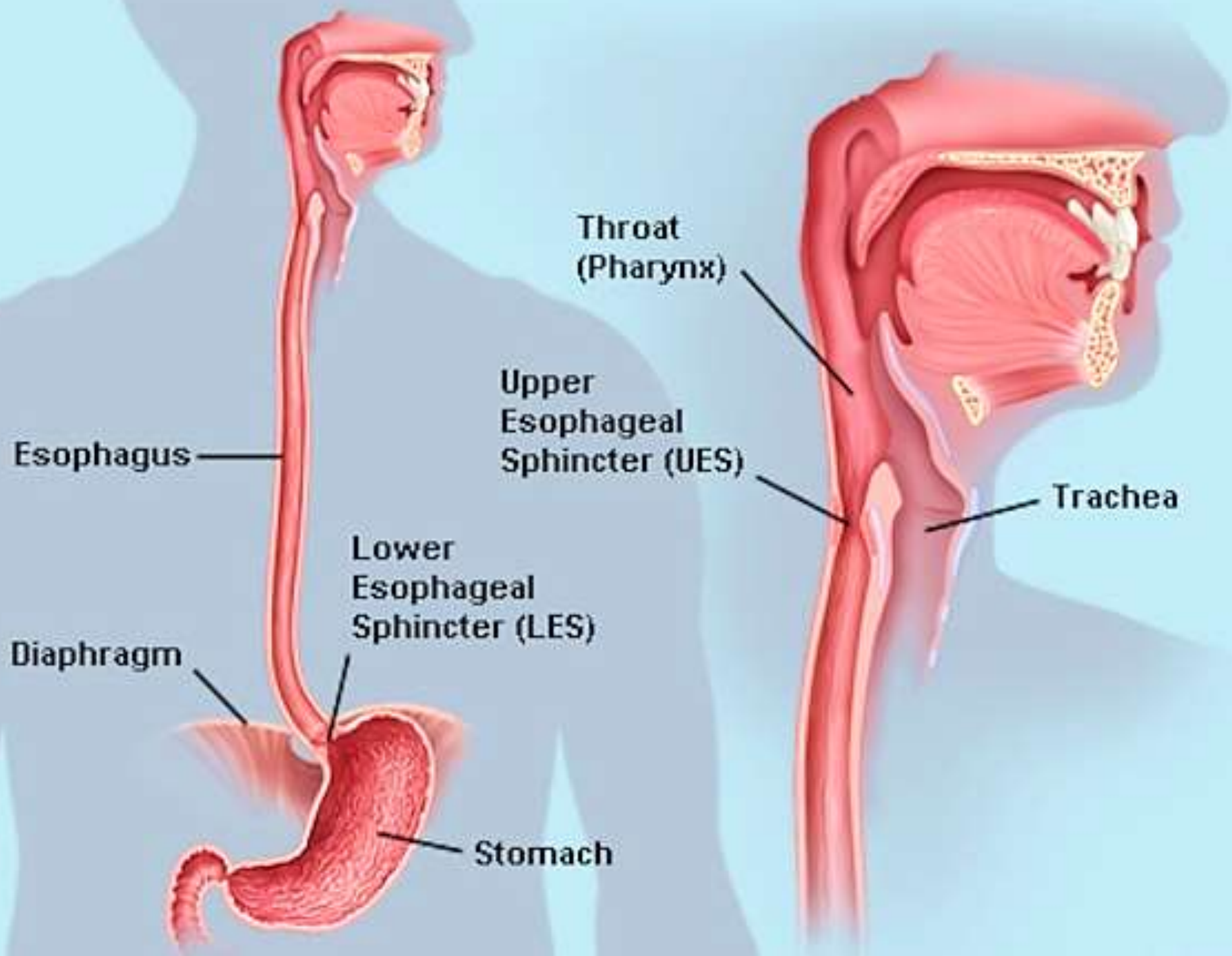
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MONDAY, 1 / OCTOBER / 2018

# Objectives :

- Upon completion of this lecture, you will be able to:
- Describe the classical history and physical examination findings for the Oesophagus
- Discuss the advantages and limitations of the different radiologic studies utilized in the diagnosis the Oesophagus.
- Describe the treatment priorities for the Oesophageal diseases and injuries.
- Know surgical operations regarding Oesophageal conditions.
- Manage emergent Oesophageal states.



**C6**



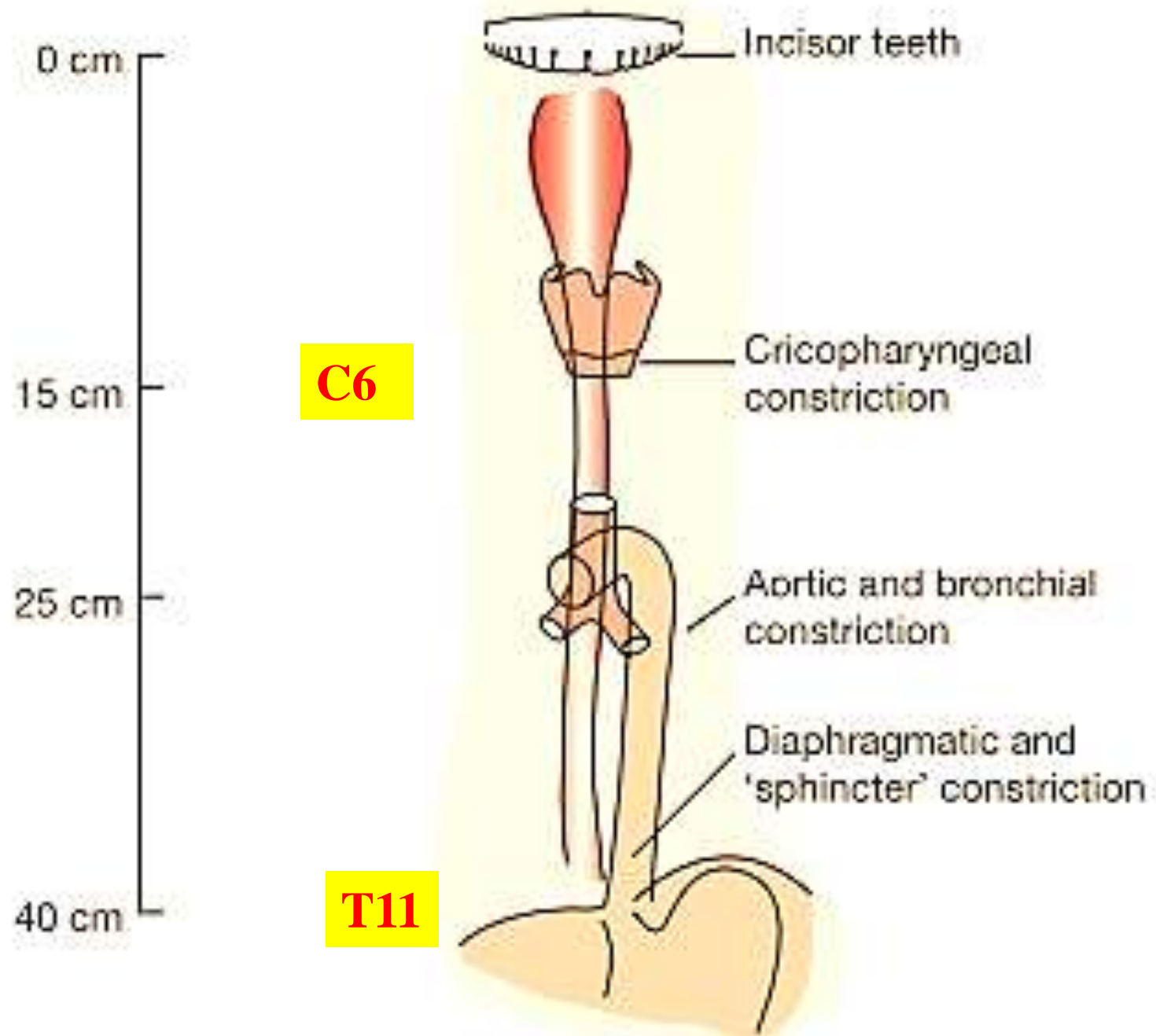
Cervical part **4 cm**

Thoracic part **20 cm**

**T11**



Abdominal part **1-2 cm**



## **Clinical Anatomy**

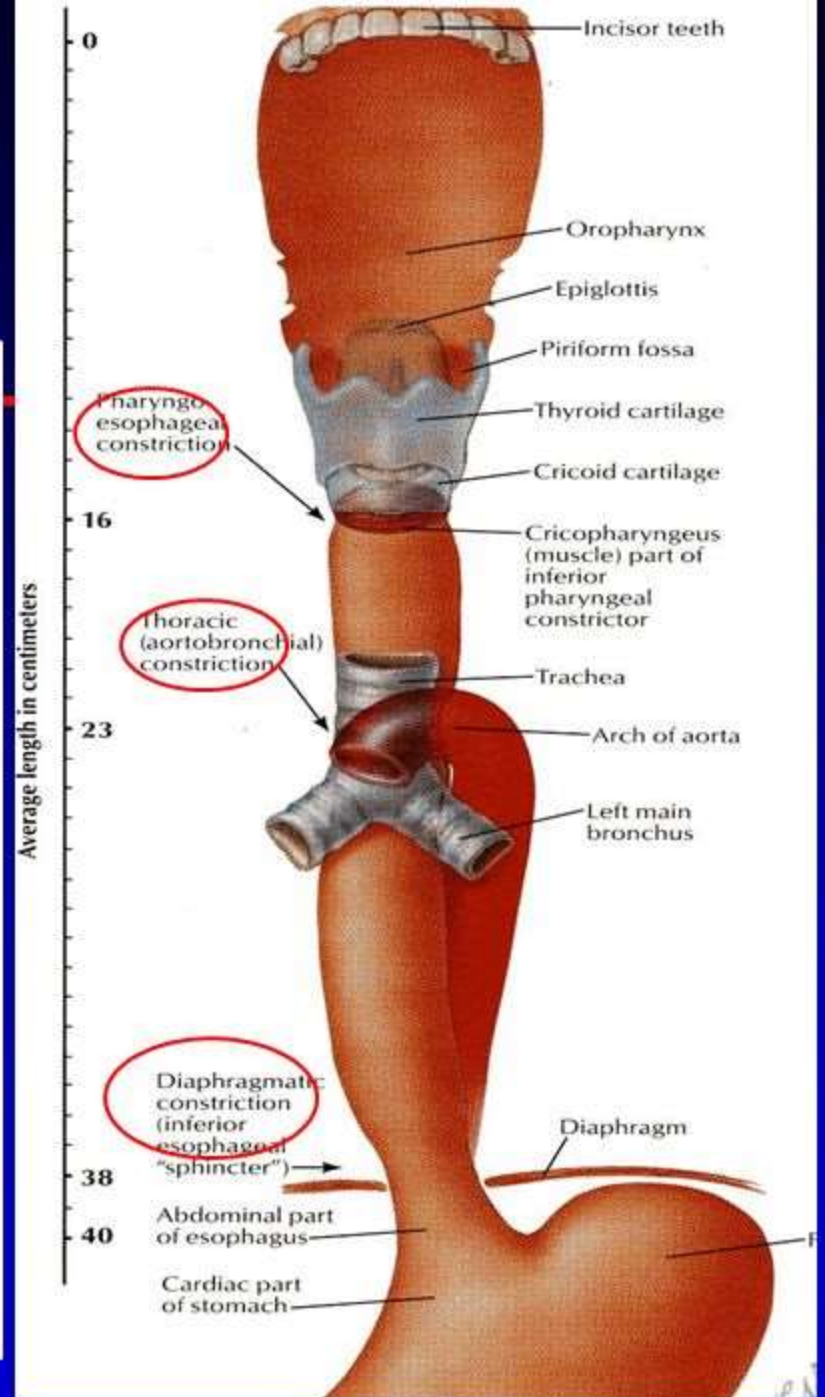
- Three indentations.
- Nasogastric tube.
- Endoluminal Ultrasonography and Cardiac doppler.
- O.G.D.
- Assessment for lesions (imaging (Contrast study & E.LU.)).
- Localization of the lesion (pain, dysphagia ).

## **Clinical Physiology**

- Oesophageal sphincters (Upper and Lower).
- G.O.R.D.
- Motor activities and wave contractions (Coordination and rhythmicity).

# ESOPHAGEAL CONSTRICTIONS

- The esophagus has 3 anatomic constrictions.
- The first is at the junction with the pharynx (pharyngoesophageal junction).
- The second is at the crossing with the aortic arch and the left main bronchus.
- The third is at the junction with the stomach.
- They have a considerable clinical importance.
- Why?





## **Clinical Pathology**

- Diseases ( ulcer, mass, Ca, Crohn's disease, ...).

## Symptoms

- Dysphagia ( DDx oropharyngeal ).
- Odynophagia.
- Regurgitation and Reflux.
- Chest pain.

# Symptoms

## Summary box 62.1

### Symptoms of oesophageal disease

- Difficulty in swallowing described as food or fluid sticking (oesophageal dysphagia): must rule out malignancy
- Pain on swallowing (odynophagia): suggests inflammation and ulceration
- Regurgitation or reflux (heartburn): common in gastro-oesophageal reflux disease
- Chest pain: difficult to distinguish from cardiac pain

# Investigations

- Radiology (Imaging):
  - Plain X Ray , Contrast Study ( Barium swallow ) and double contrast.
  - CT scan.
  - M.R.I.
- Endoscopy.( O.G.D. ).
- Endosonography.

## Investigation

- Radiography (Plain ( F.B.)/ Contrast study ( Ba swallow ( GORD, Ulcer, Ca, Motility disorders, stricture, T.O. fistula)/ ( Contrast CT scan Ca, perforation ) .
- Endoscopy Diagnostic procedure ( +/- biopsy { ulcer }/ hemostasis, dilatation, F.B., Thermal recanalization ( Therapeutic procedure) .
- Endosonography.
- Oesophageal manometry.
- PH and Impedance recording.



### **Impacted Foreign Body.**

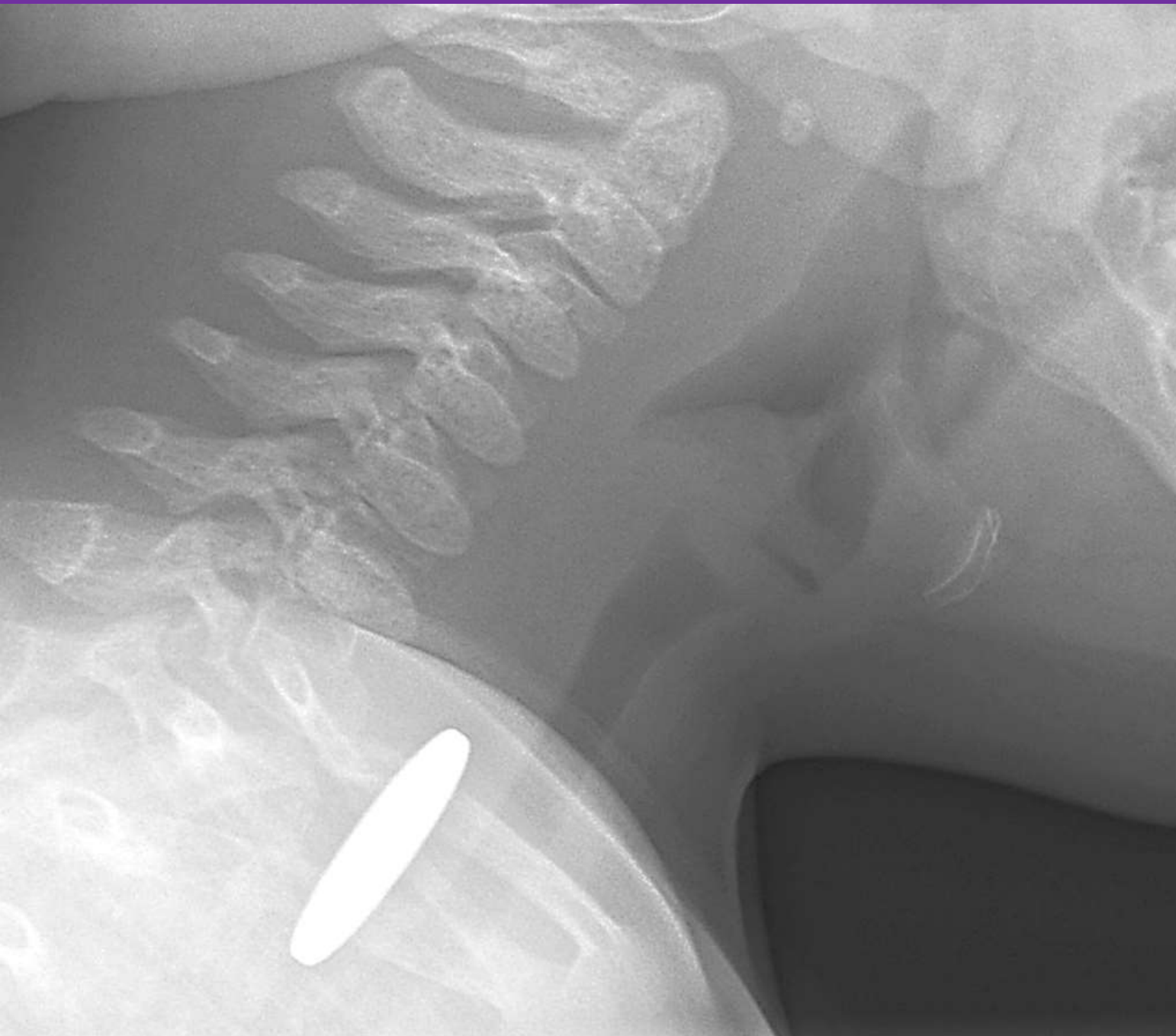
**Lateral radiograph of the neck demonstrates a linear density in the region of the proximal esophagus (red arrow) consistent with an impacted foreign body--in this case, a chicken bone. There is no air in the soft tissues and no soft tissue swelling is identified to indicate the presence of a retropharyngeal abscess.**



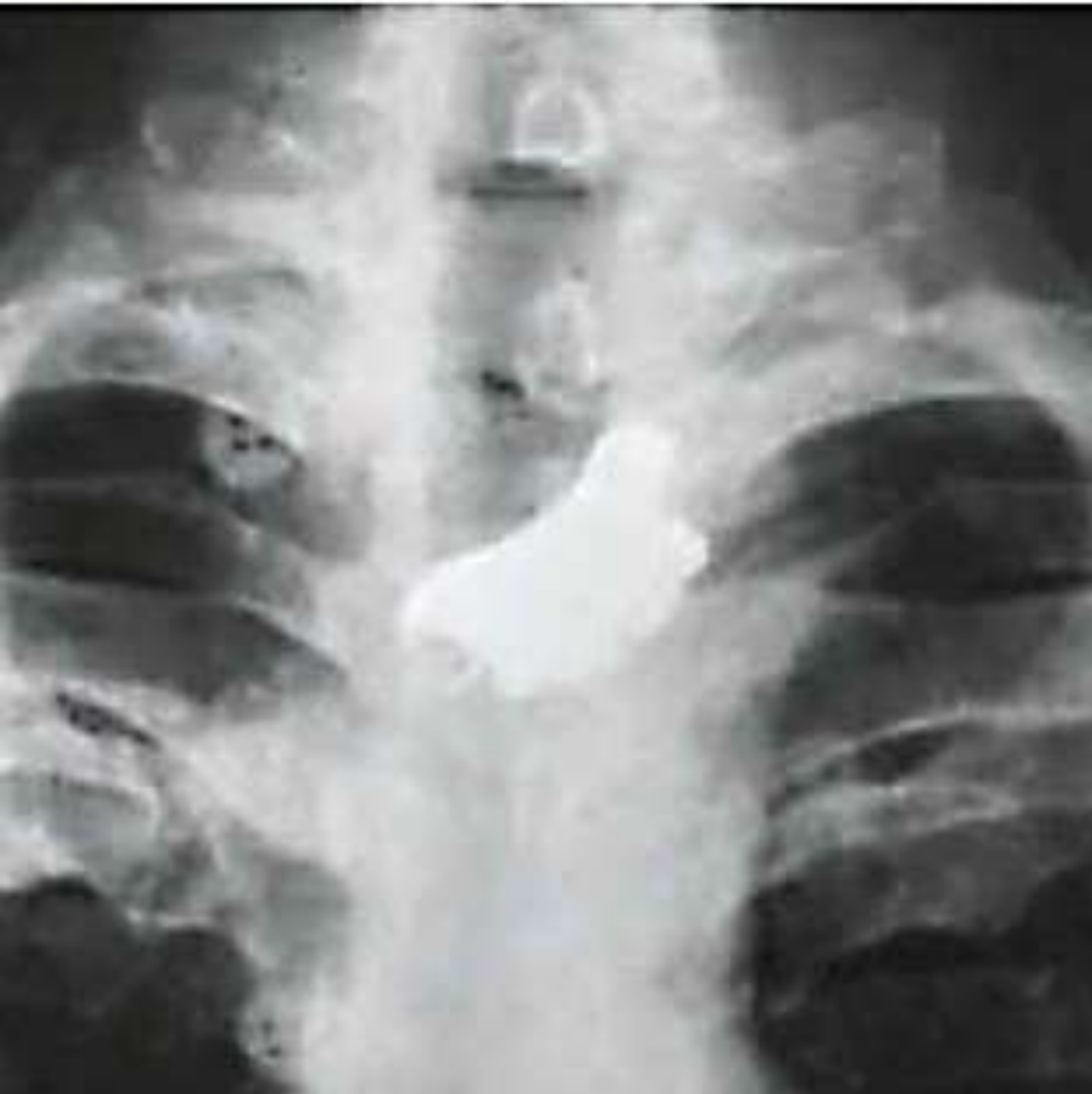


- A circular metallic density in keeping with a coin projects over the thoracic outlet.
- It lies in coronal plane. Lungs are clear with no atelectasis.

**Soft tissue neck confirms coin lies in the oesophagus, posterior to the trachea.**







**Figure 62.7** False teeth impacted in the oesophagus. (Note: modern dentures are usually radiolucent.)

# Presentation

## Ingested coin. No respiratory distress.

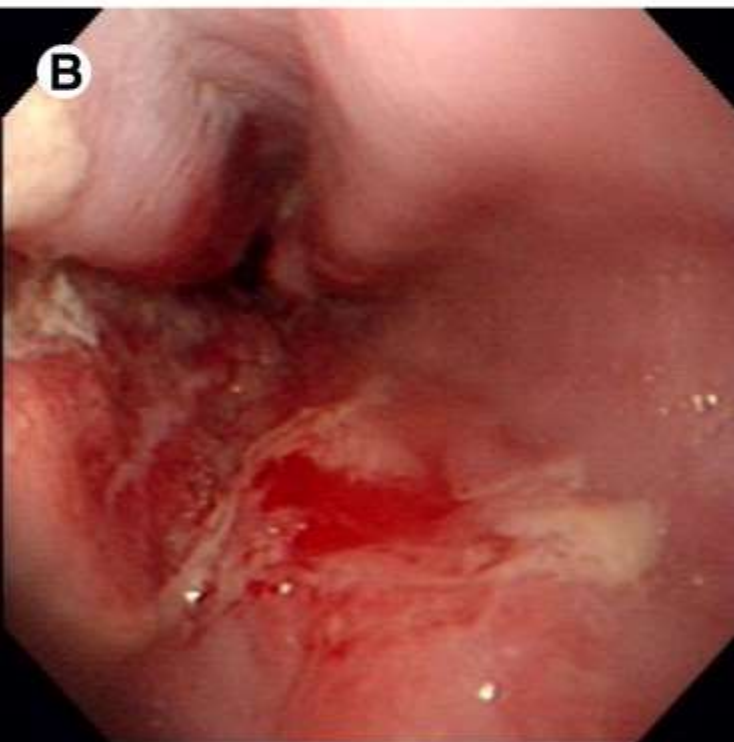
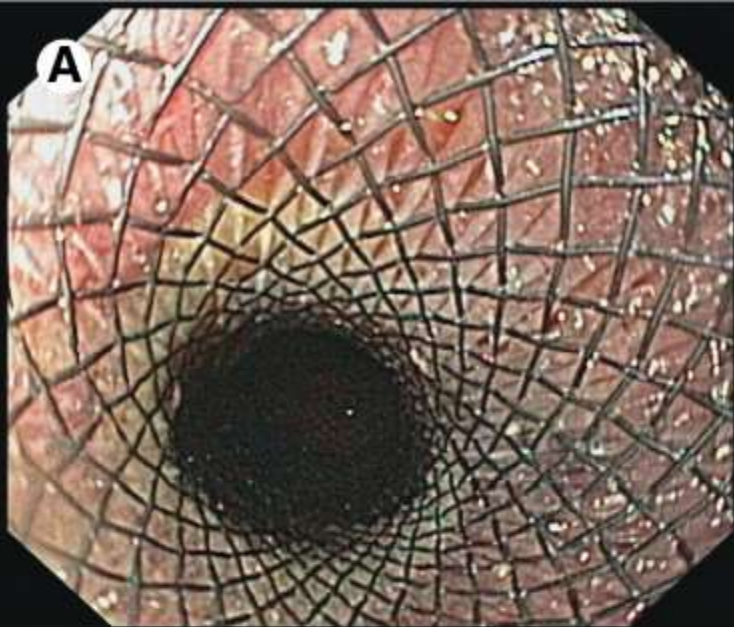
### Case Discussion

- coins lying in the oesophagus tend to lie in the **coronal** plane, whereas coins lying in the trachea lie in the **sagittal** plane

associated features of airway foreign bodies include atelectasis or hyperinflation as well as respiratory distress

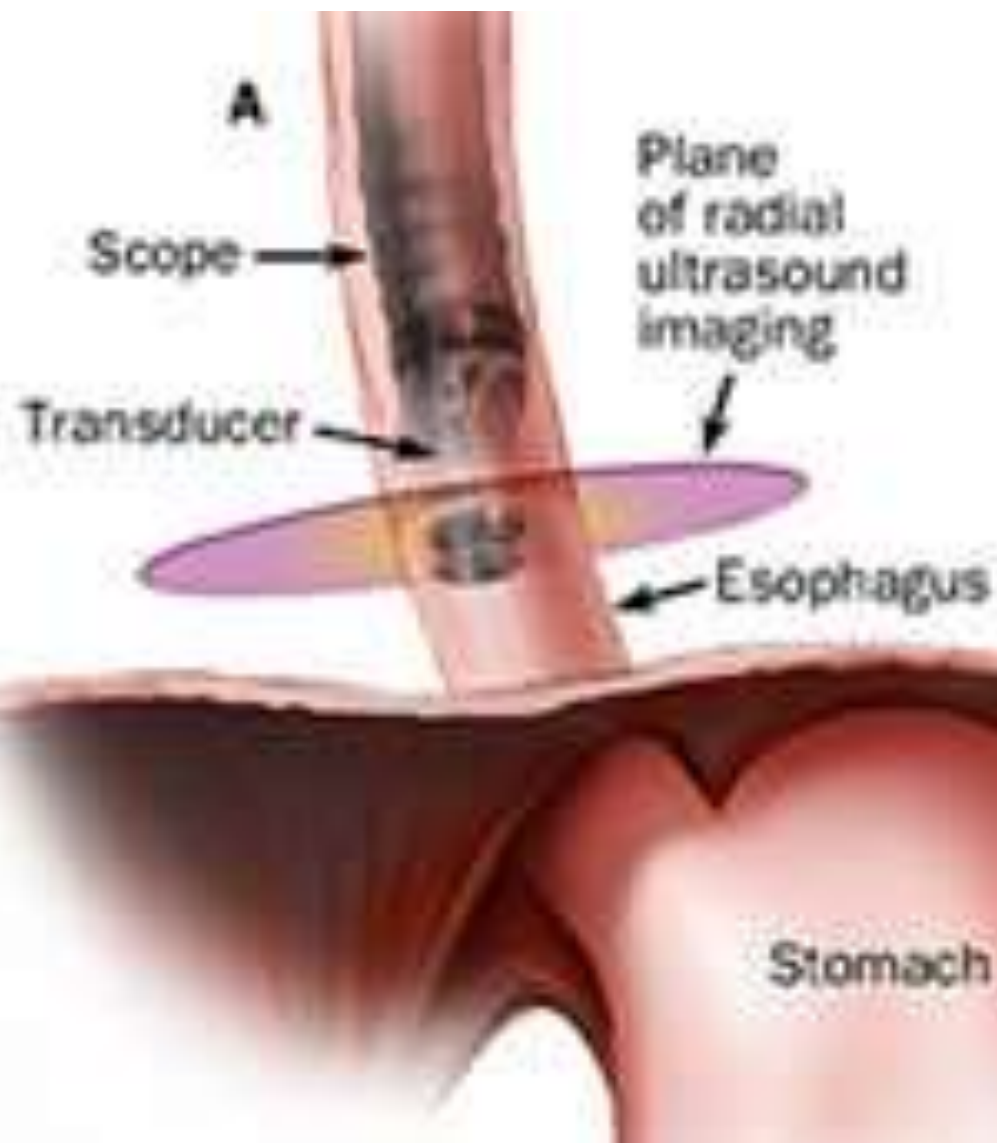
# Barium swallow Contrast Study

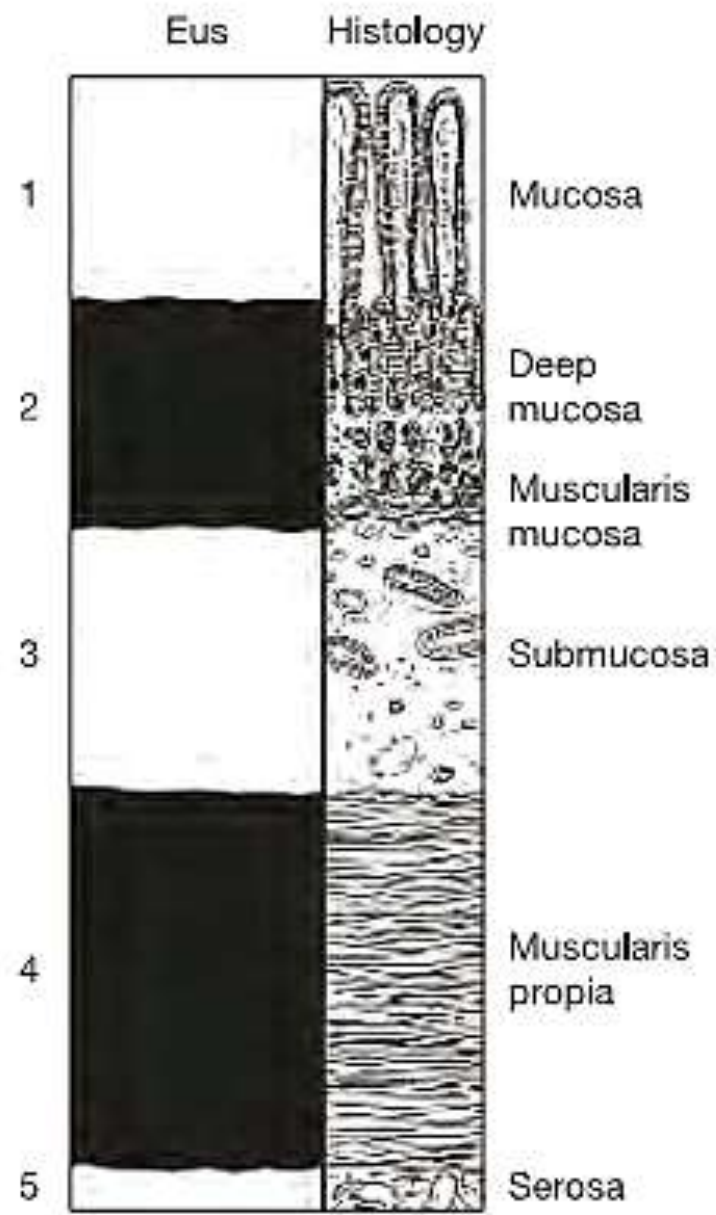
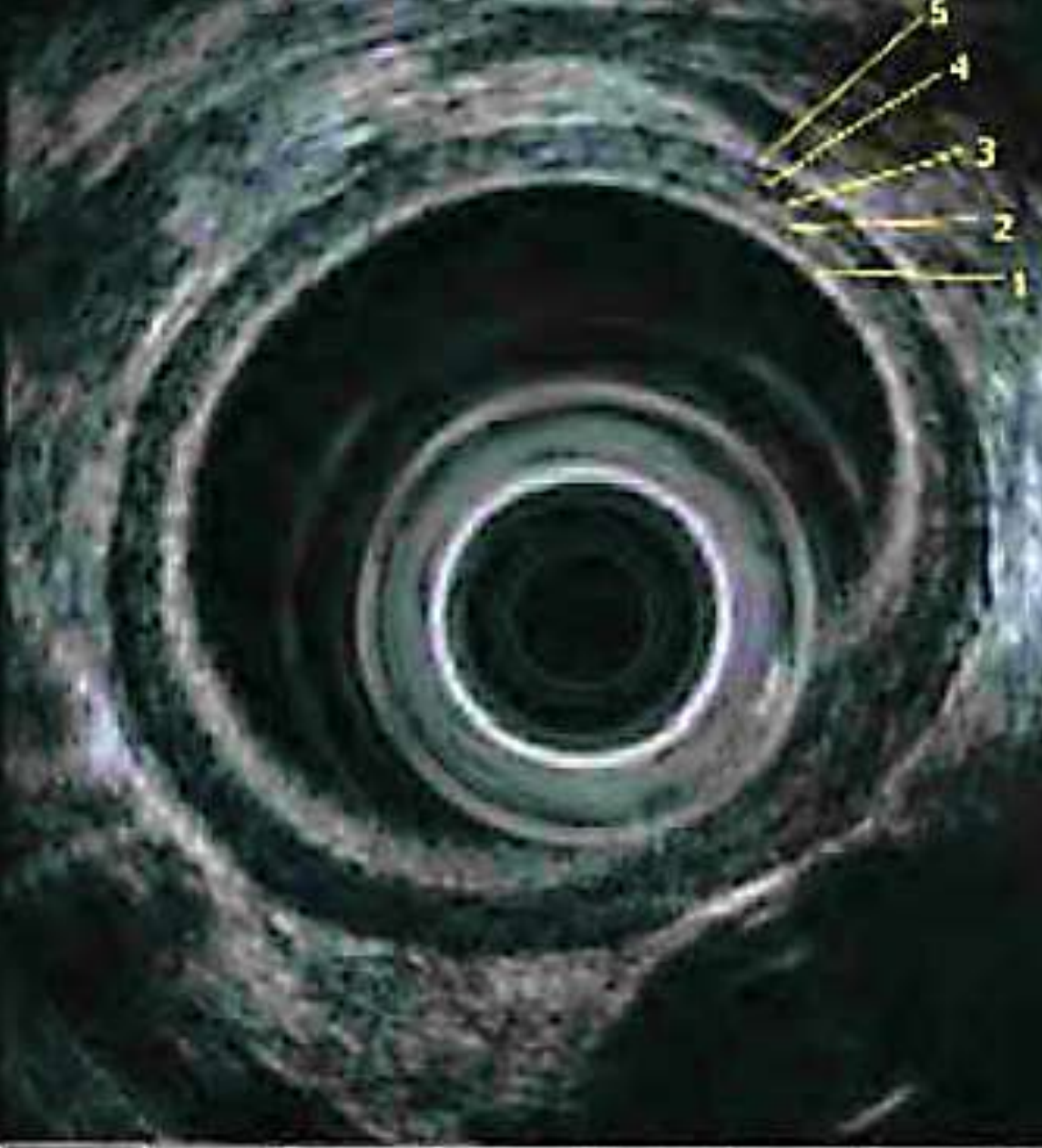
# Endoscopy



DR. MURRA

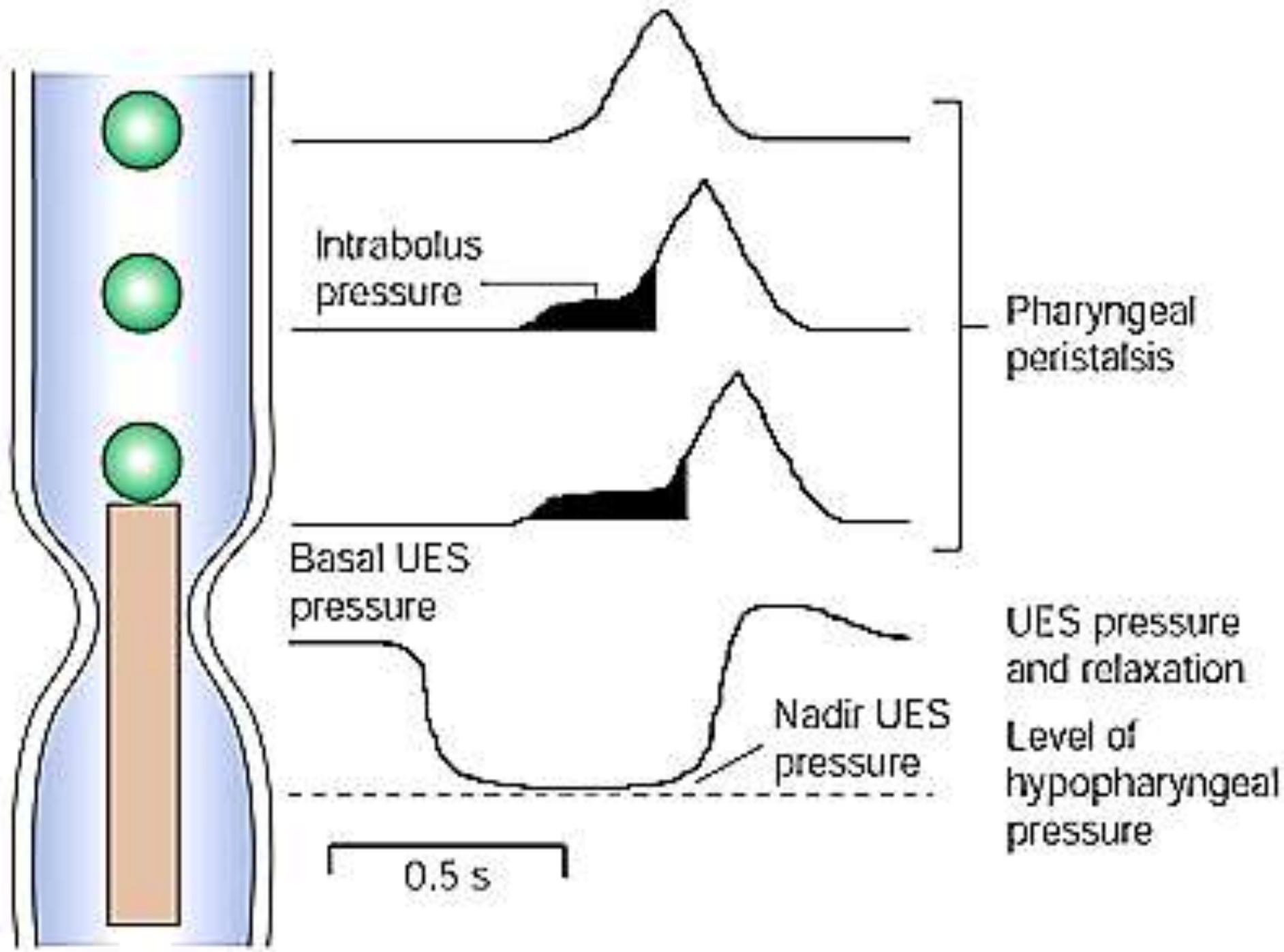
# Endosonography

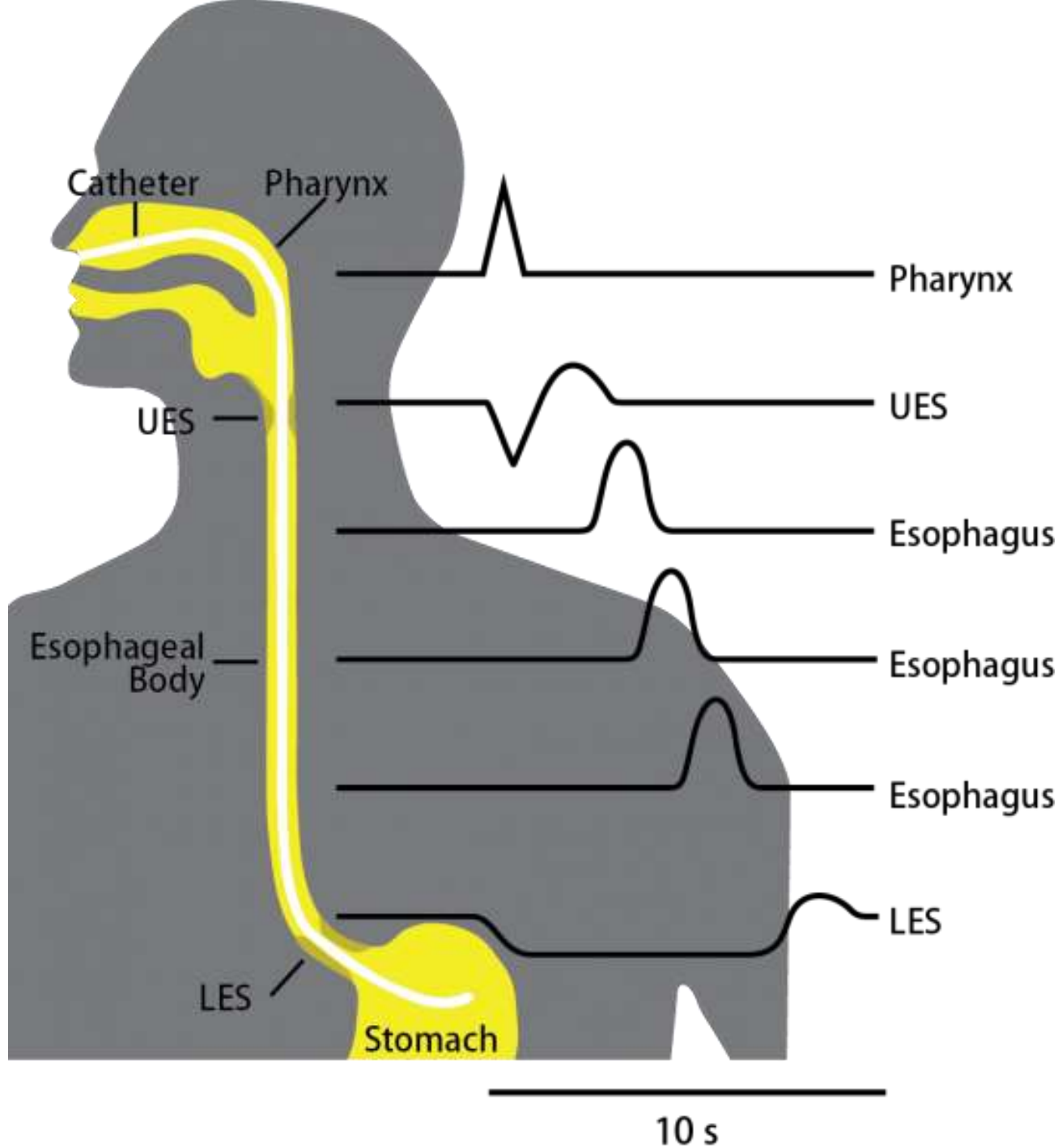






# Manometry





# **Diseases and Injuries**

- **Congenital abnormalities.**
- **Foreign bodies.**
- **Perforation( spontaneous Barotrauma ),Pathological,Penetrating injury, Foreign body,Instrumental ) (Chemical, Physical , mechanical and Ca.,**
- **Mallory Weiss Syndrome.**
- **Corrosive Injury.**
- **Drug induced Injury.**
- **G.O.R.D.**
- **Barrett's Oesophagus.**
- **Hiatus Hernia.**
- **Neoplasm ( Benign and Malignant).& post cricoid tumor.**
- **Motility disorders and diverticulae. ( Achalasia, Webs,**
- **Infections ( candida, Chagas disease)**
- **Crohn's disease.**
- **Plummer vinson disease ( Sideropenic Dysphagea ).**
- **Vascular abnormality.**
- **Varicose vein.**
- **Mediastinal fibrosis.**

# Foreign Bodies

- Children :Button and battery.
- Adult : Impacted food bolus ( above significant pathological site.
- Rx: Flexible Endoscopy :
  - ( grasper, snaring or basket).An Overtube can be used to withdraw the F.B. through it.
  - A Multiwire retrieval basket for battery removal.
  - Impacted food bolus can be broken up or extracted.



**Figure 62.8** An impacted meat bolus at the lower end of the oesophagus. This may be the first presentation of a benign stricture or a malignant tumour.

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- Iatrogenic ( Instrumental)
- Spontaneous

## Summary box 62.3

### Perforation of the oesophagus

- Potentially lethal complication due to mediastinitis and septic shock
- Numerous causes, but may be iatrogenic
- Surgical emphysema is virtually pathognomonic
- Treatment is urgent; it may be conservative or surgical, but requires specialised care

# Spontaneous ( Boerhaave's ) Perforation

- Vomiting ( or Straining ) against closed glottis.
- Burst at lower 1/3<sup>rd</sup> .
- Chemical mediastinitis +/- pluritis.
- S+S: Chest pain and dyspnea.
- Imaging : Pneumomediastinum, Pneumothorax or pneumoperitonium. Pleural effusion > upper vabdominal rigidity.
- Rx : Surgery.

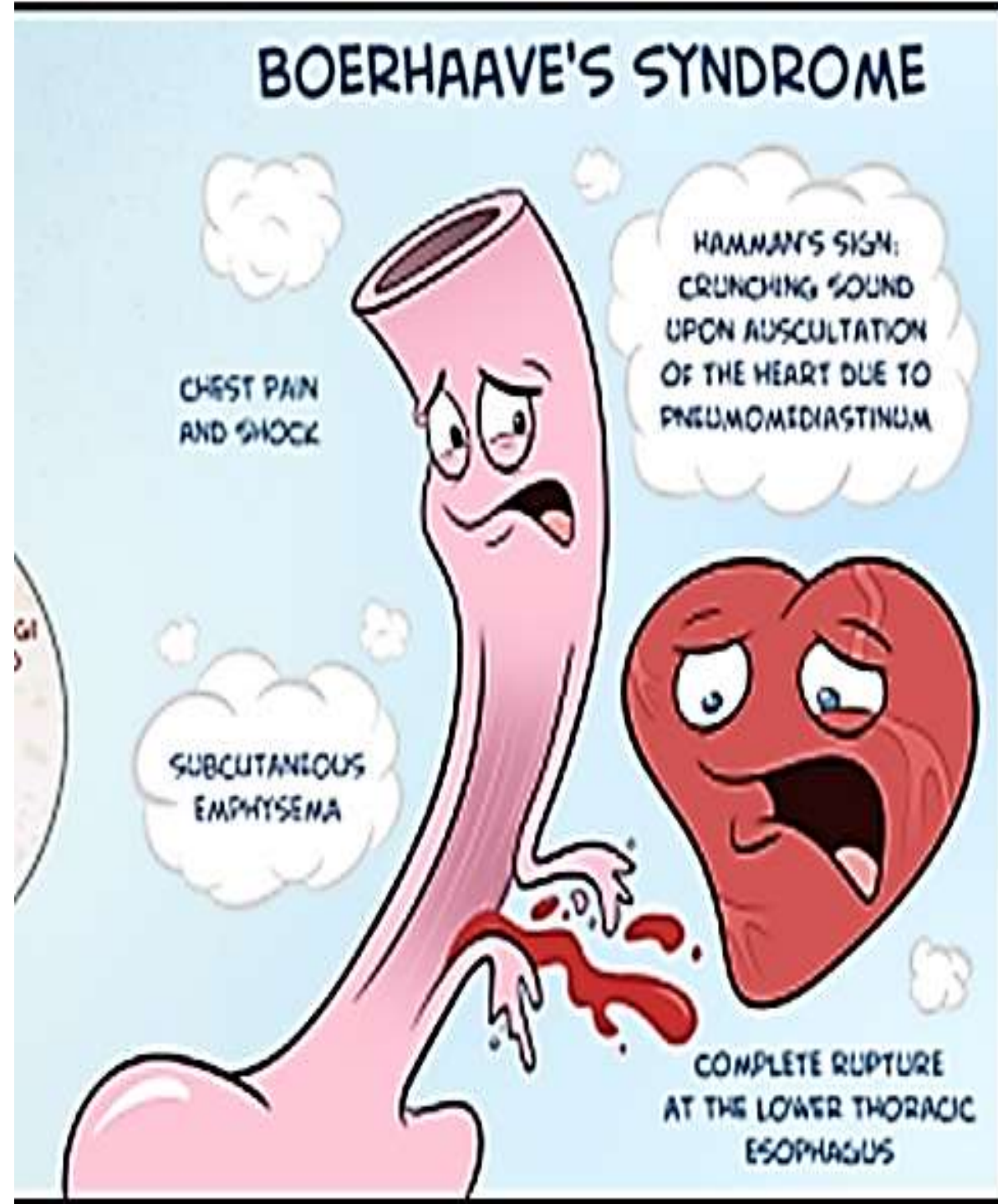
# BOERHAAVE'S SYNDROME

CHEST PAIN  
AND SHOCK

HAMMAN'S SIGN:  
CRUNCHING SOUND  
UPON AUSCULTATION  
OF THE HEART DUE TO  
PNEUMOMEDIASTINUM

SUBCUTANEOUS  
EMPHYSEMA

COMPLETE RUPTURE  
AT THE LOWER THORACIC  
ESOPHAGUS



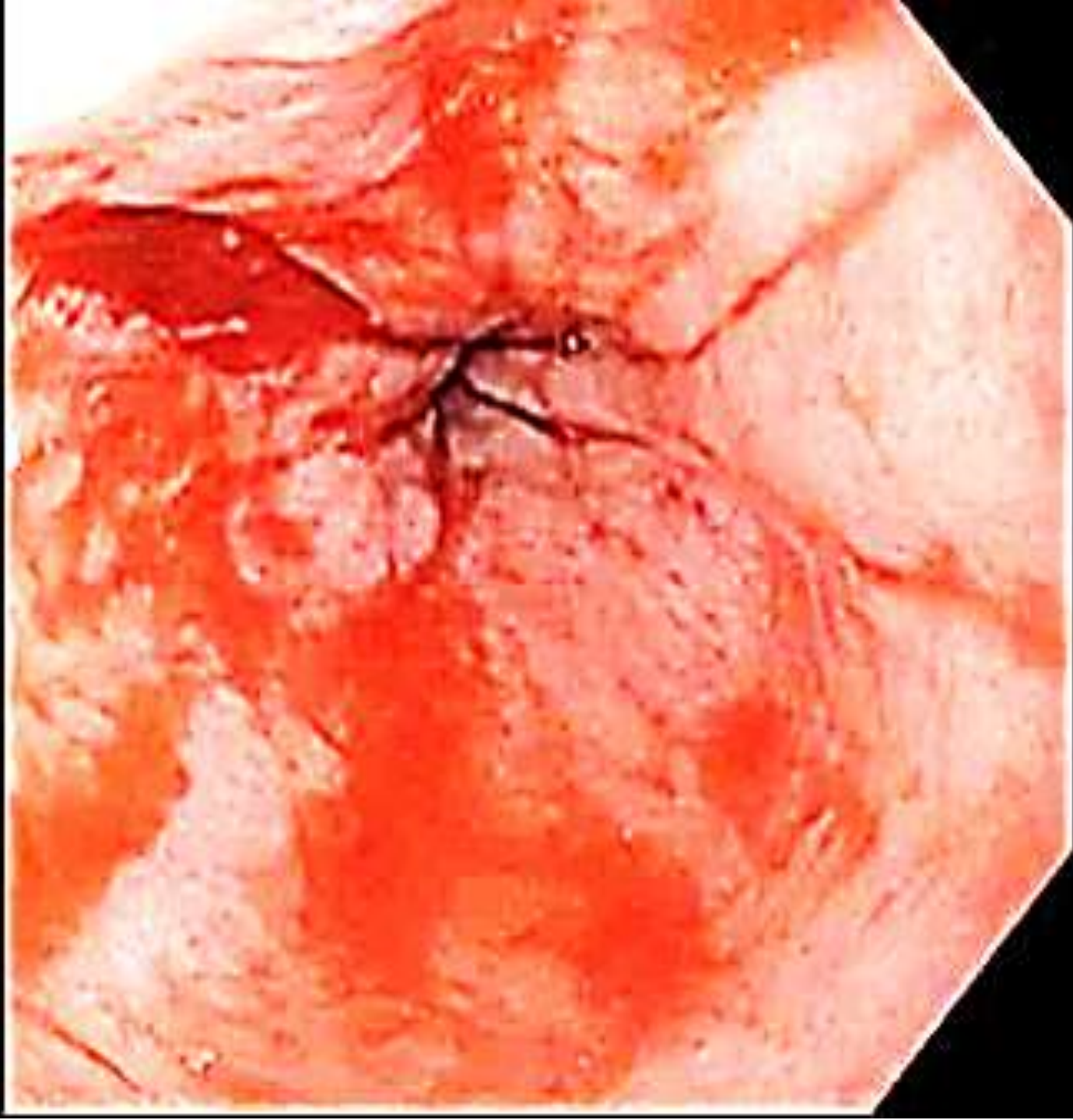
- **Pathological Perforation : Tumor**  
( Adjacent structure pleura, trachea and great vessels.
- **Penetrating Injury ( stab ).**
- **Foreign Body.**
- **Instrumental Perforation ( OGD ).**

**TABLE 62.1** Management options in perforation of the oesophagus.

Factors that favour non-surgical management	Factors that favour surgical repair
Small septic load	Large septic load
Minimal cardiovascular upset	Septic shock
Perforation confined to mediastinum	Pleura breached
Perforation by flexible endoscope	Boerhaave's syndrome
Perforation of cervical oesophagus	Perforation of abdominal oesophagus

# Mallory Weiss Tear

- It is a longitudinal tear a long GO Junction.
- It is due to strenuous and repetitive vomiting.
- Associated (+ / - ) hematemesis.
- Endoscopy.
- Upper Longitudinal gastrotomy looking for the tear doing under running suture.



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# **Corrosive Injury**

# Corrosive Injury

- Suicidal attempts .
- Accidental . ( Children )
- Alkalis : liquefaction and saponification of fat, dehydration, blood vessels thrombosis leading to fibrous scarring.
- Acids : Coagulative necrosis with eschar formation, limiting the penetration to the deeper layers of the esophageal wall .
- Associated with gastric injury.
- Mx: Early endoscopy
  - Minor Injury: Redness and edema. ( Conservative ).
  - Severe Injury: Deep ulcer, black eschar & penetrating lesion ( Feeding jejunostomy ).
- Scheduled Endoscopy to assess stricture formation ( Balloon dilatation, resection or replacement by colon).

G.E.R.D. / G.O.R.D.

- Incompetent G.O.S.
- Change in G.O. pressure gradient.
- Heart burn, Epigastric pain and regurgitation.
- If dysphagia ( stricture ).
- Ix : Endoscopy+biopsy.

( normal esophagus, esophagitis , H.H. , Barrett's esophagus ).

- 24 hrs PH recording and esophageal manometry.

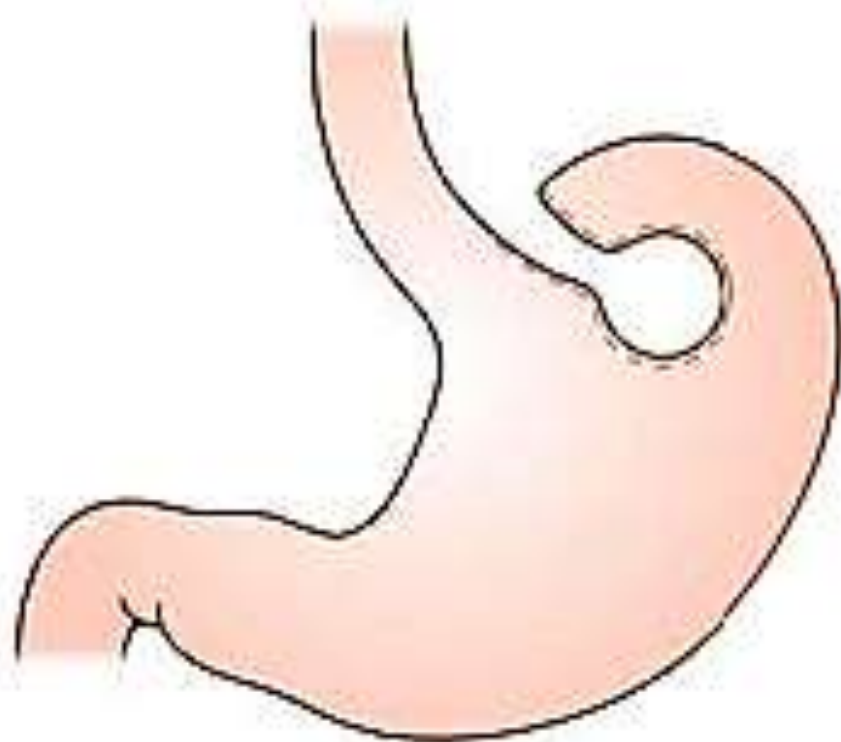
## Summary box 62.8

### GORD

- Is due to **loss** of competence of the LOS and is **extremely common**
- May be associated with a hiatus hernia, which may be **sliding** or, **less commonly**, **rolling** (paraoesophageal)
- The most common symptoms are heartburn, epigastric discomfort and regurgitation, often made worse by **stooping** and **lying**
- **Achalasia** and GORD are **diagnostically easily confused**
  - Dysphagia may occur, but a **neoplasm** must be **excluded**
  - Diagnosis and treatment can be instituted on **clinical grounds**
- Endoscopy may be required and 24-hour pH is the '**gold standard**'
  - Management is **primarily medical** (PPIs being the most effective), but surgery may be required; **laparoscopic fundoplication** is the most **popular** technique
  - **Stricture** may **develop** in time

# Complication

- **Stricture.**
- **Shortening**



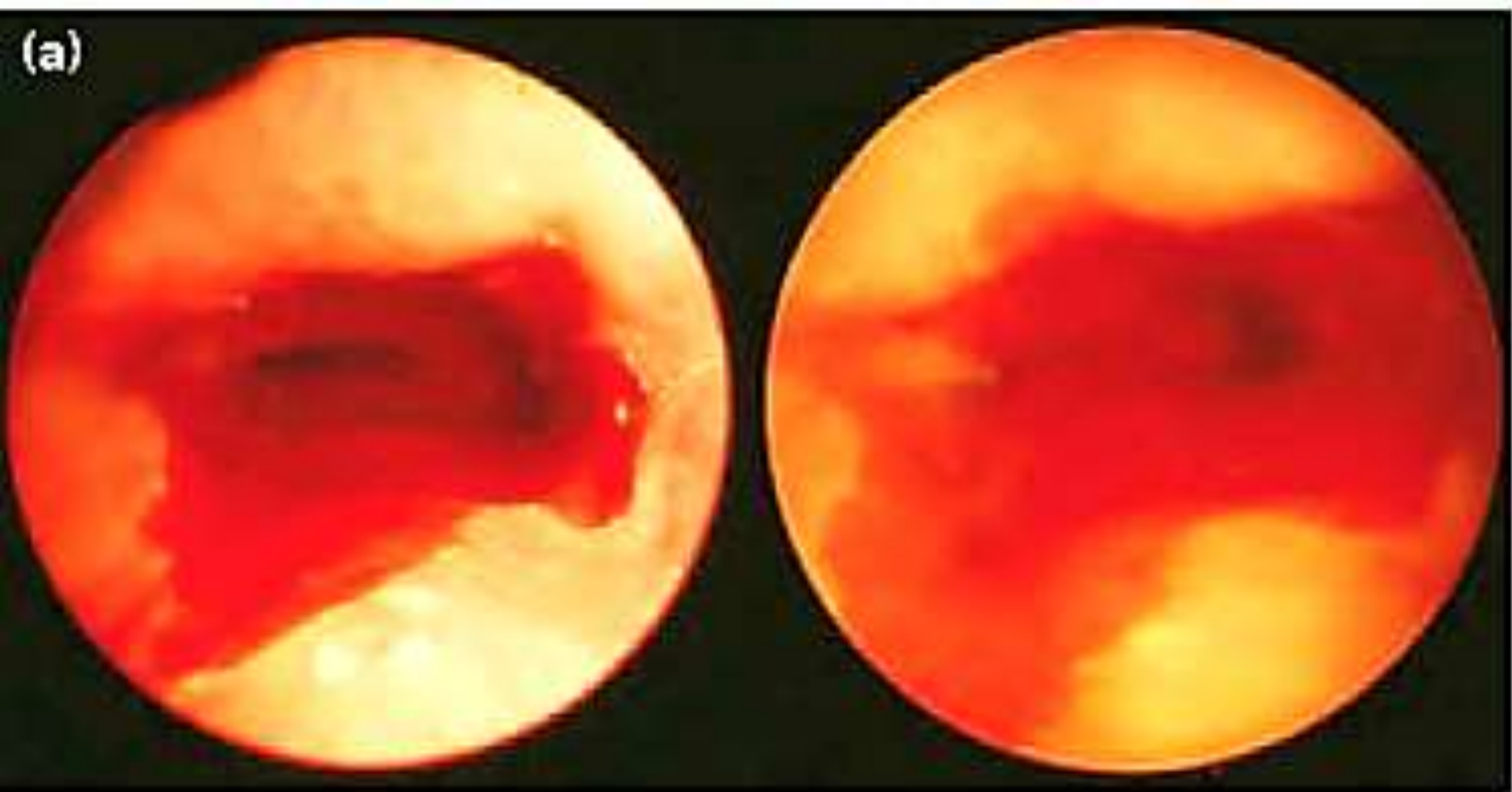
**Figure 62.24** Collis gastroplasty to produce a neo-oesophagus around which a Nissen fundoplication is done. The operation may be performed by a laparoscopic as well as an open approach, using circular and linear staplers.

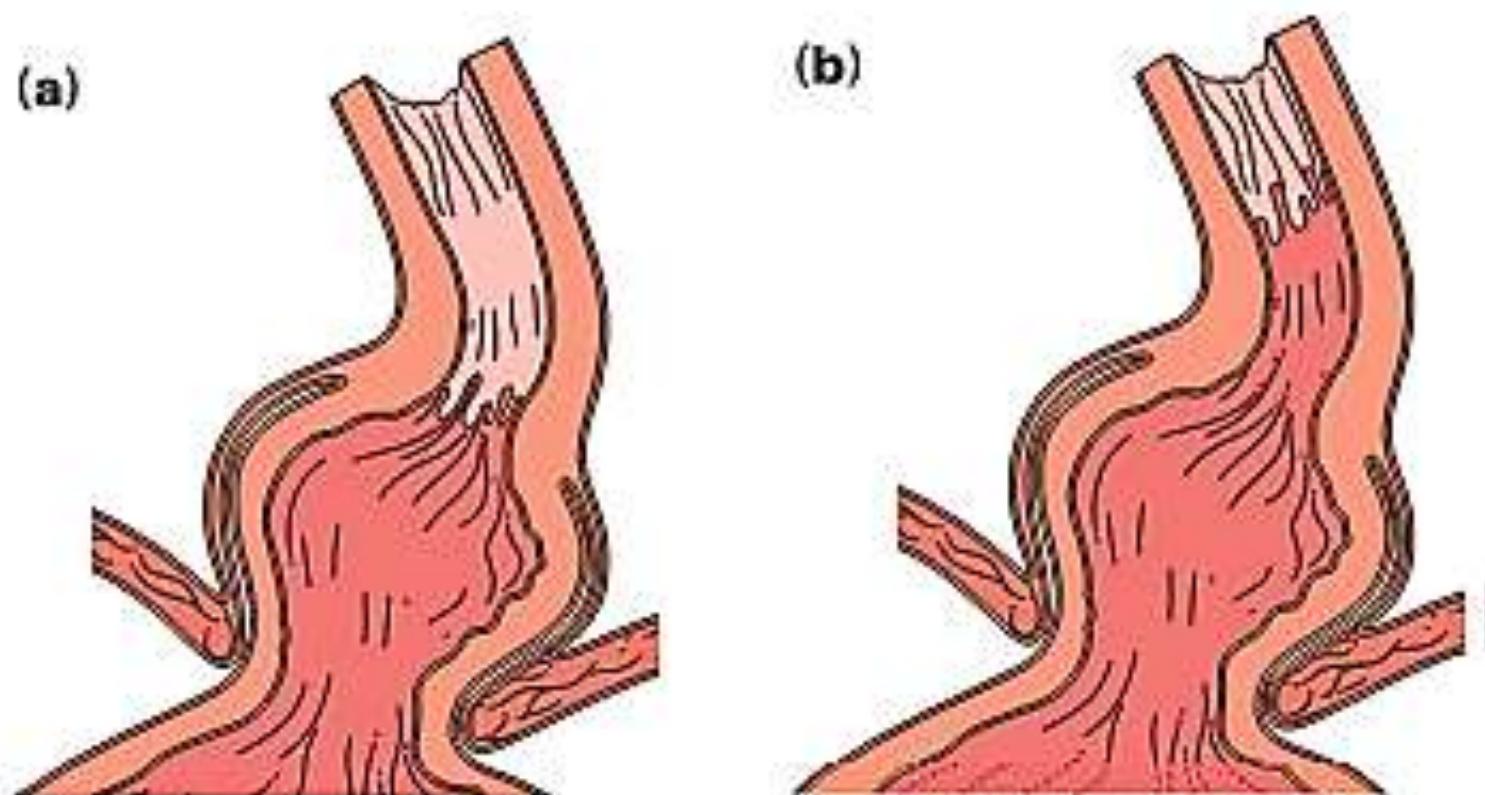
# Barrett's Esophagus

- Metaplasia.
- GORD +/- H.H.
- Precancerous ( Dysplasia ).
- Endoscopy + Biopsy.
- PPI.
- Mucosal ablation ( laser, photodynamic therapy, Argon beam plasma coagulation, R.F. A. and E.M.R.

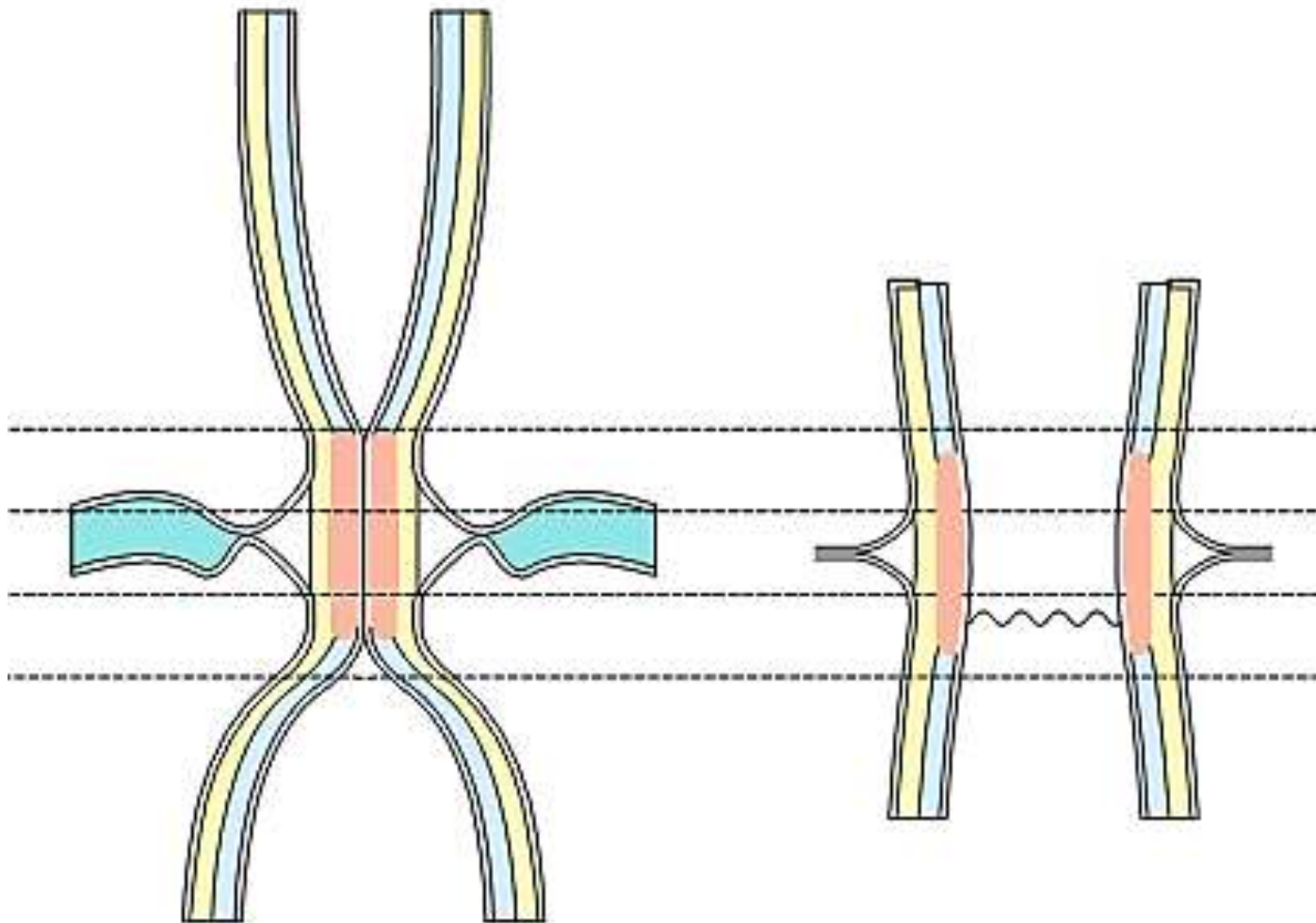
- classic Barrett's ( $\geq 3$  cm columnar epithelium);
- short-segment Barrett's ( $< 3$  cm of columnar epithelium);
- cardia metaplasia (intestinal metaplasia at the oesophago-gastric junction without any macroscopic change at endoscopy).







**Figure 62.26** (a) The interrelationship of the lower oesophageal sphincter, the squamocolumnar junction and the diaphragm in sliding hiatus hernia. (b) Barrett's oesophagus and sliding hernia.

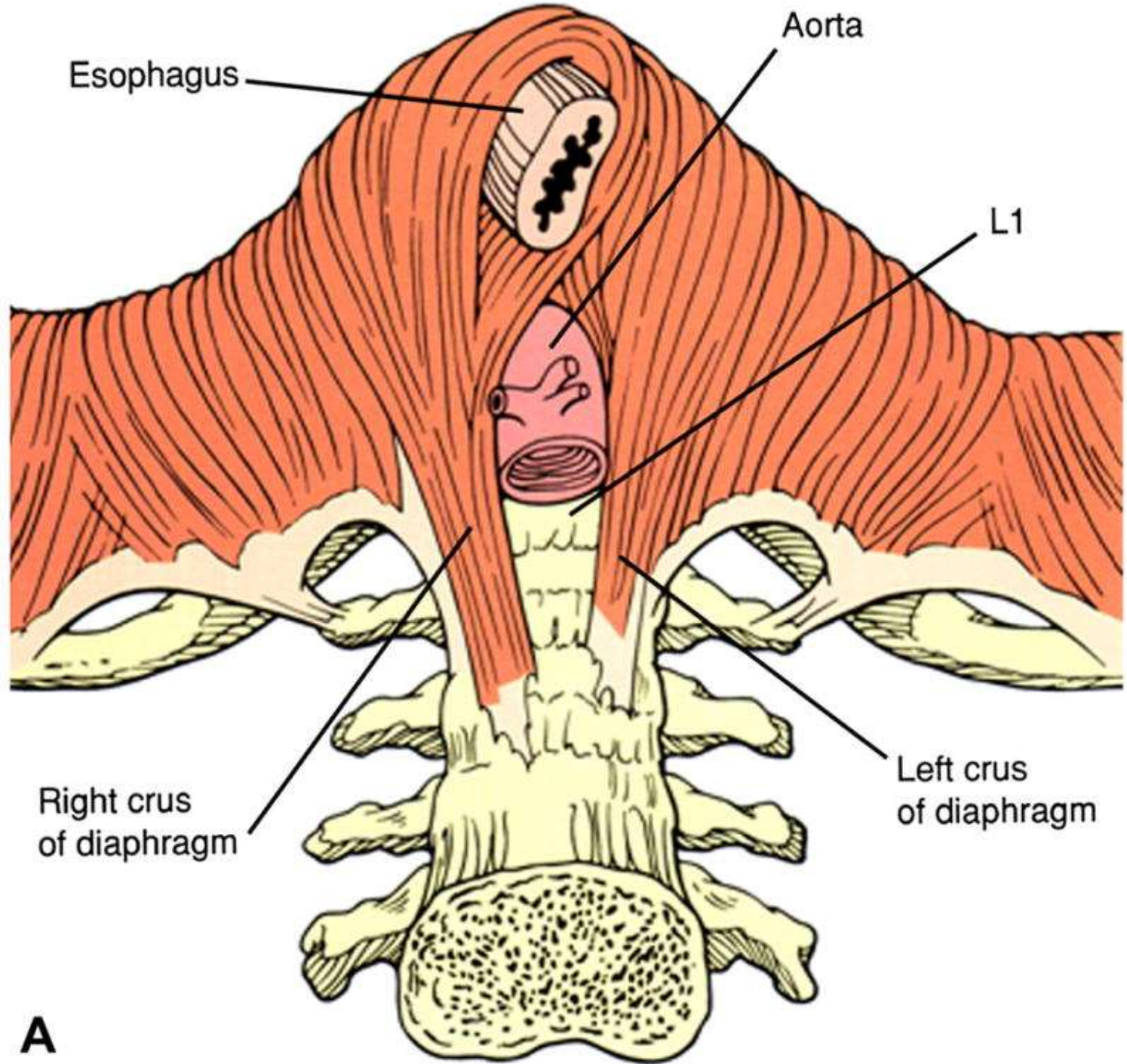


Anatomy of the sphincter

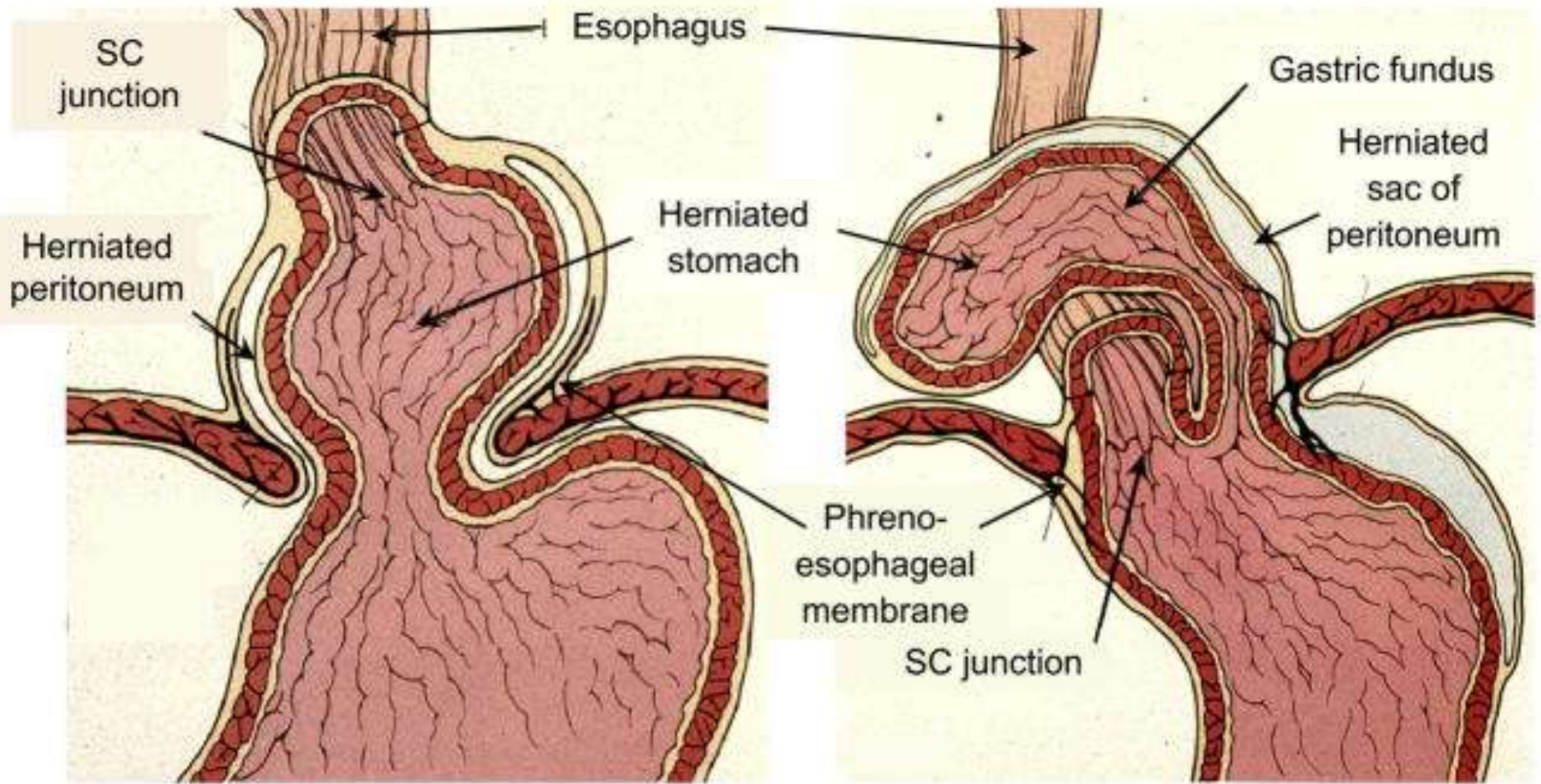
Closed

Open

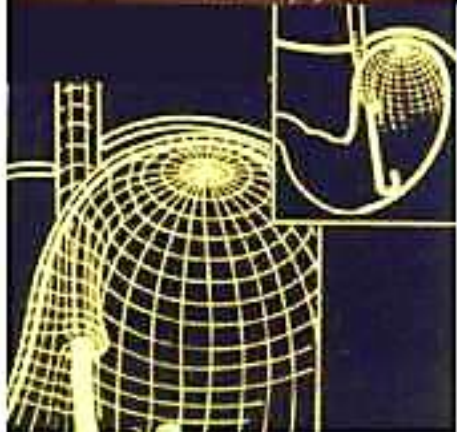
**Hiatal hernia** (also called hiatus hernia and paraesophageal hernia) occurs when part of the stomach protrudes into the thoracic cavity through the esophageal hiatus of the diaphragm.



**A**



Grade I



Grade II



Grade III



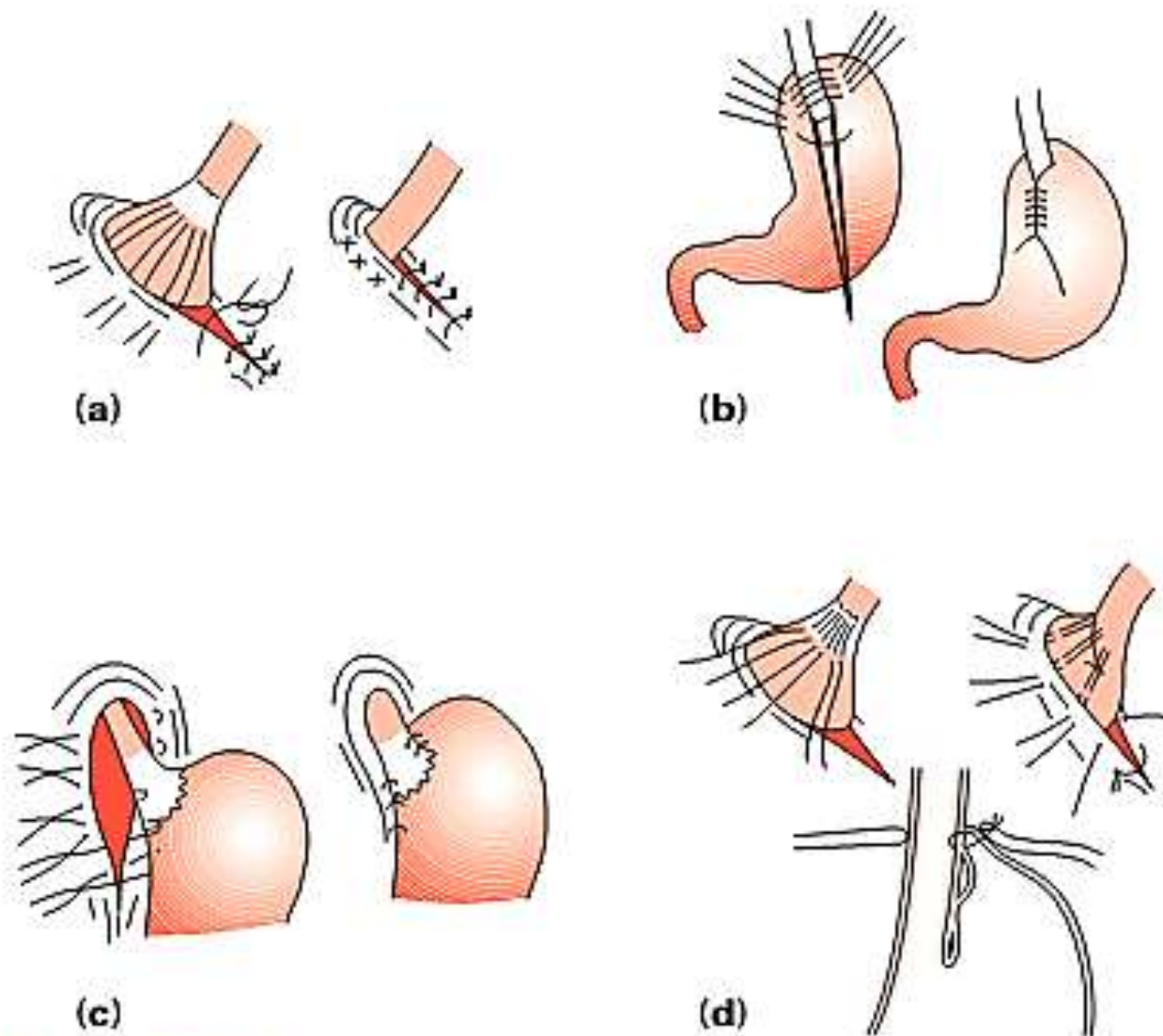
Grade IV



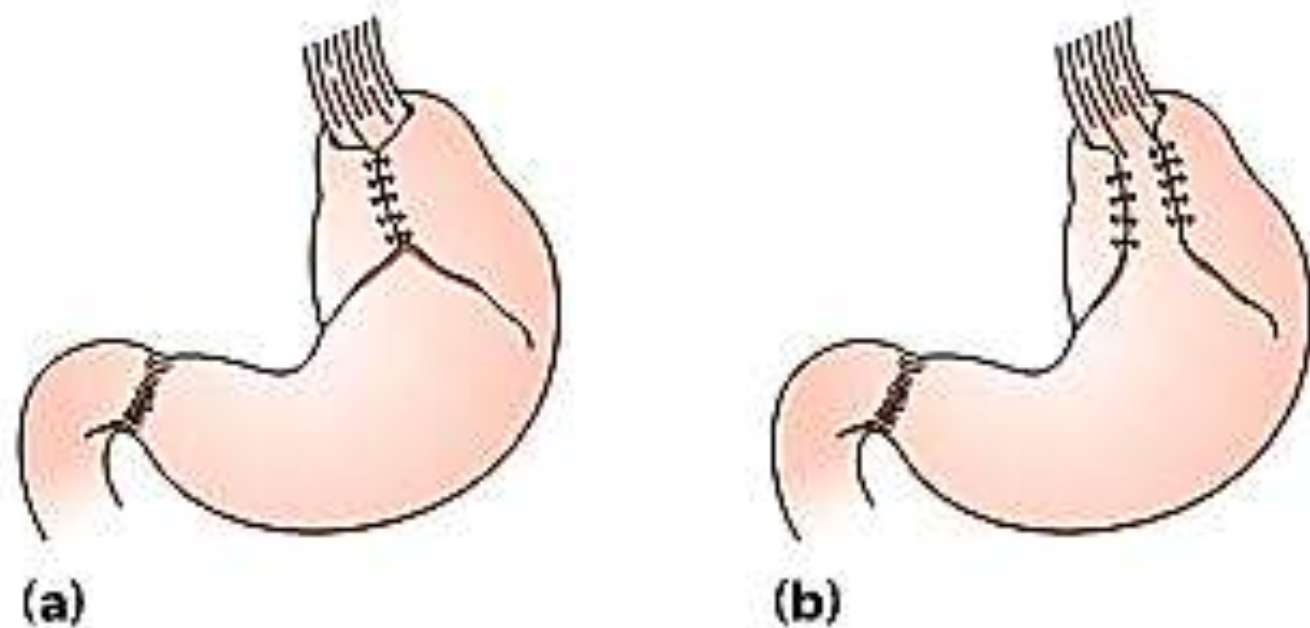
# Treatment

- **Medical: PPI**
- **Endoscopic : Plication angle of His,RFA+ polymer injection in LOS**
- **Surgical:Anti-Reflux surgery**





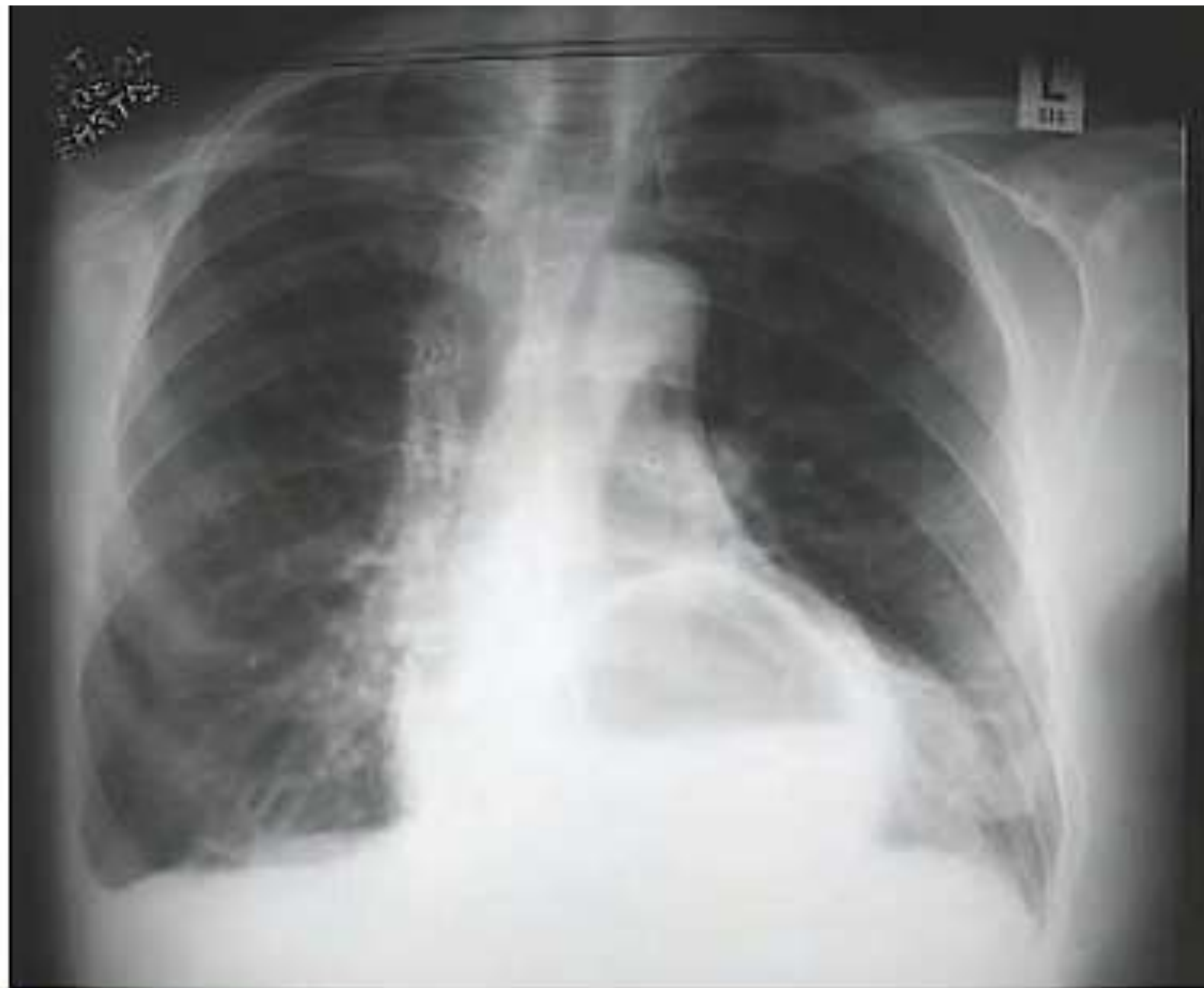
**Figure 62.21** Various operations for the surgical correction of gastro-oesophageal reflux disease. (a) The original Allison repair of hiatus hernia (this is ineffective and is no longer done); (b) Nissen fundoplication; (c) Hill procedure; (d) Belsey mark IV operation.



**Figure 62.23** (a) Total (Nissen) fundoplication; (b) partial fundoplication (Toupet).

# Para-esophageal Hernia ( Rolling )

- Fixed cardia , greater curve in the chest ( Lt ).
- Sometimes ( Volvulus).
- Colon / small bowel.
- Ps : Dysphagia, chest pain . Relief on belching.
- Ix : CXR ( plain and contrast ). CT scan and Endoscopy.

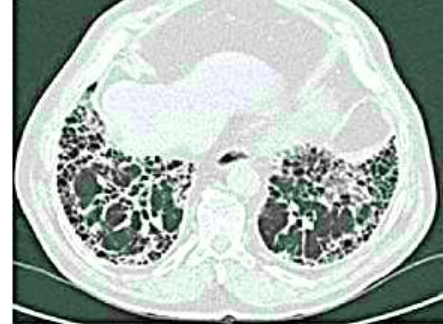
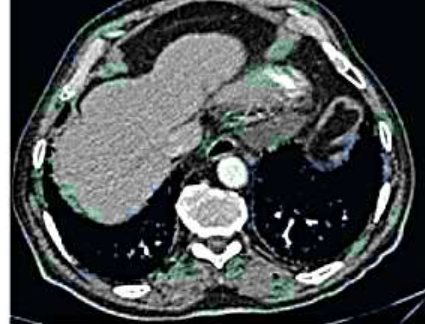


**Figure 62.33** A gas bubble seen on a plain chest radiograph, showing the fundus of the stomach in the chest (courtesy of Dr Stephen

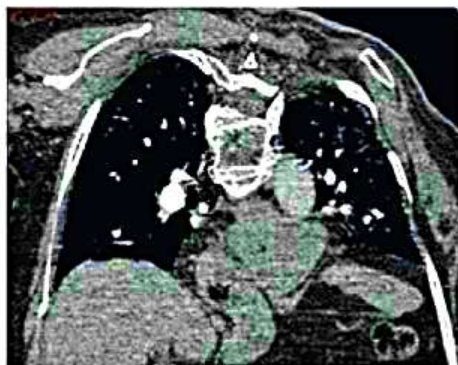


**Figure 62.32** A huge paraoesophageal hernia with an upside-down stomach and the pylorus just below the hiatus.

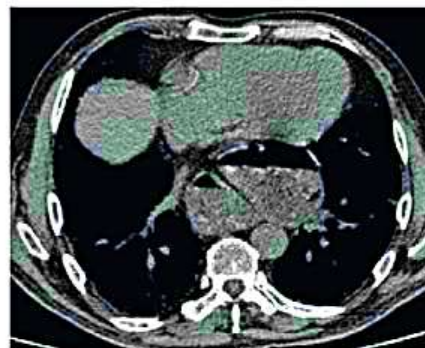
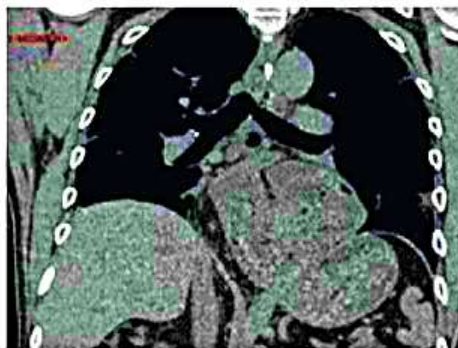
Type I



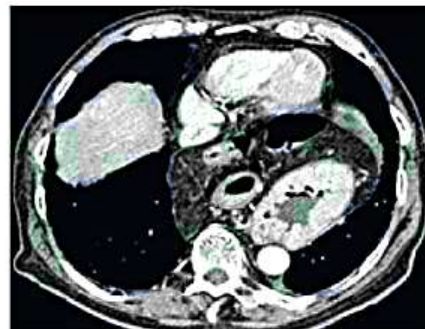
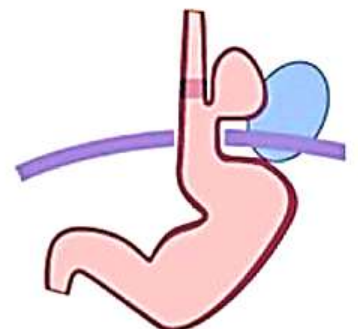
Type II



Type III



Type IV



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# Benign Tumours

- Rare.
- Mostly :GISTomas, lipoma & granular cell tumor.



# Malignant Tumours

- 1<sup>st</sup>: Mostly epithelial in origin ( Sq > Adeno ).
- 2<sup>nd</sup>: rare.

## Carcinoma of the oesophagus

- Squamous cell usually affects the upper two-thirds; adenocarcinoma usually affects the lower third
- Common aetiological factors are tobacco and alcohol (squamous cell), GORD and obesity (adenocarcinoma)
- The incidence of adenocarcinoma is increasing
- Lymph node involvement is a bad prognostic factor
- Dysphagia is the most common presenting symptom, but is a late feature
- Accurate pretreatment staging is essential in patients thought to be fit to undergo 'curative' treatment

- Both M1 early.
- It is insidious.
- Early presentation ( non specific ).
- Dysphagia, regurgitation & Wt. loss.( vomiting & odenophagea).
- Spread : Direct ( Longitudinal / Lateral ).and transperitoneal ( Transcoelomic ).  
    Blood stream. ( 3 Ls, brain ).  
    Lymphatic ( L.N. ).( caudal/cranial)

# Advanced Malignancy

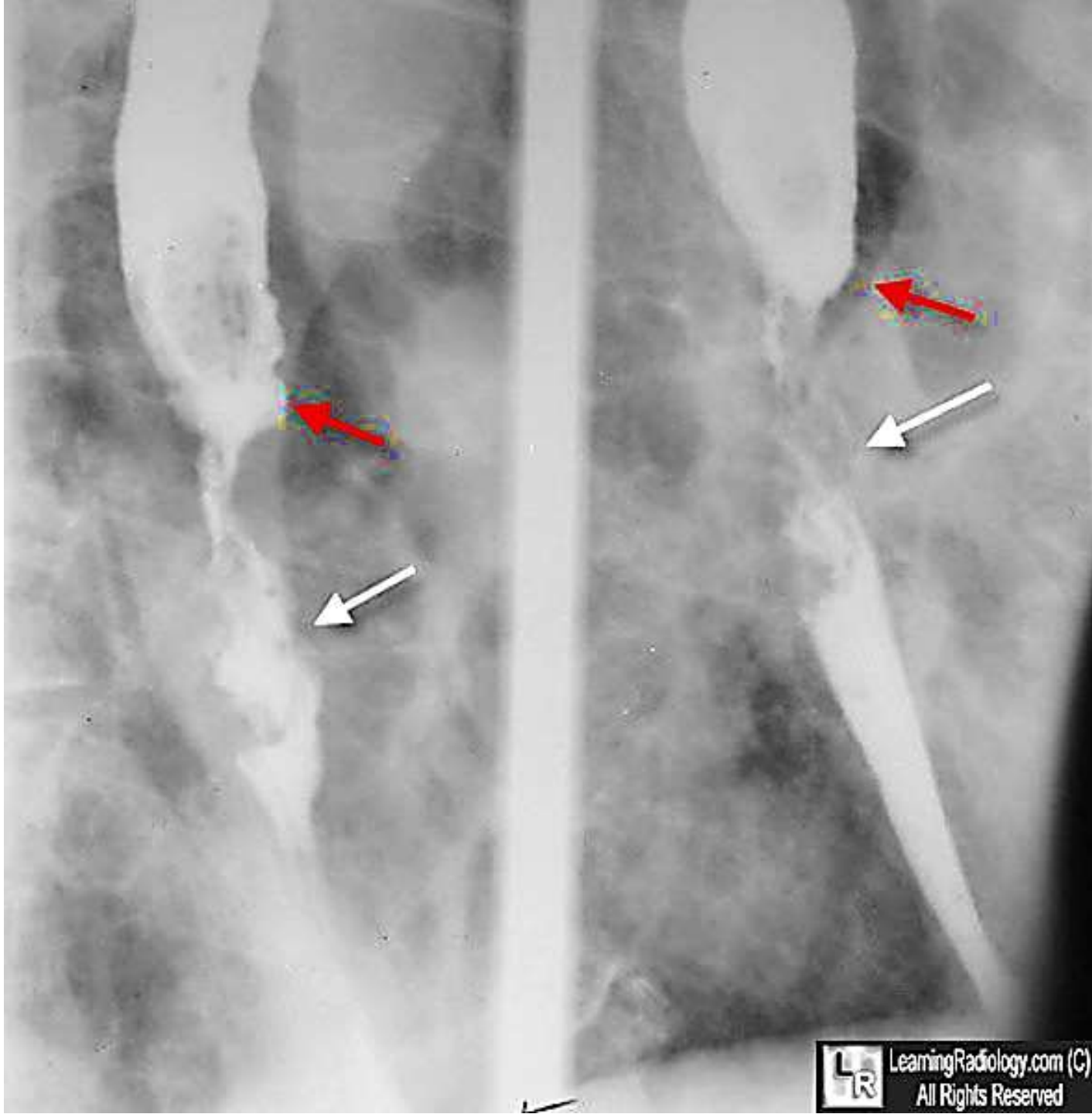
## Surgical cure is unlikely

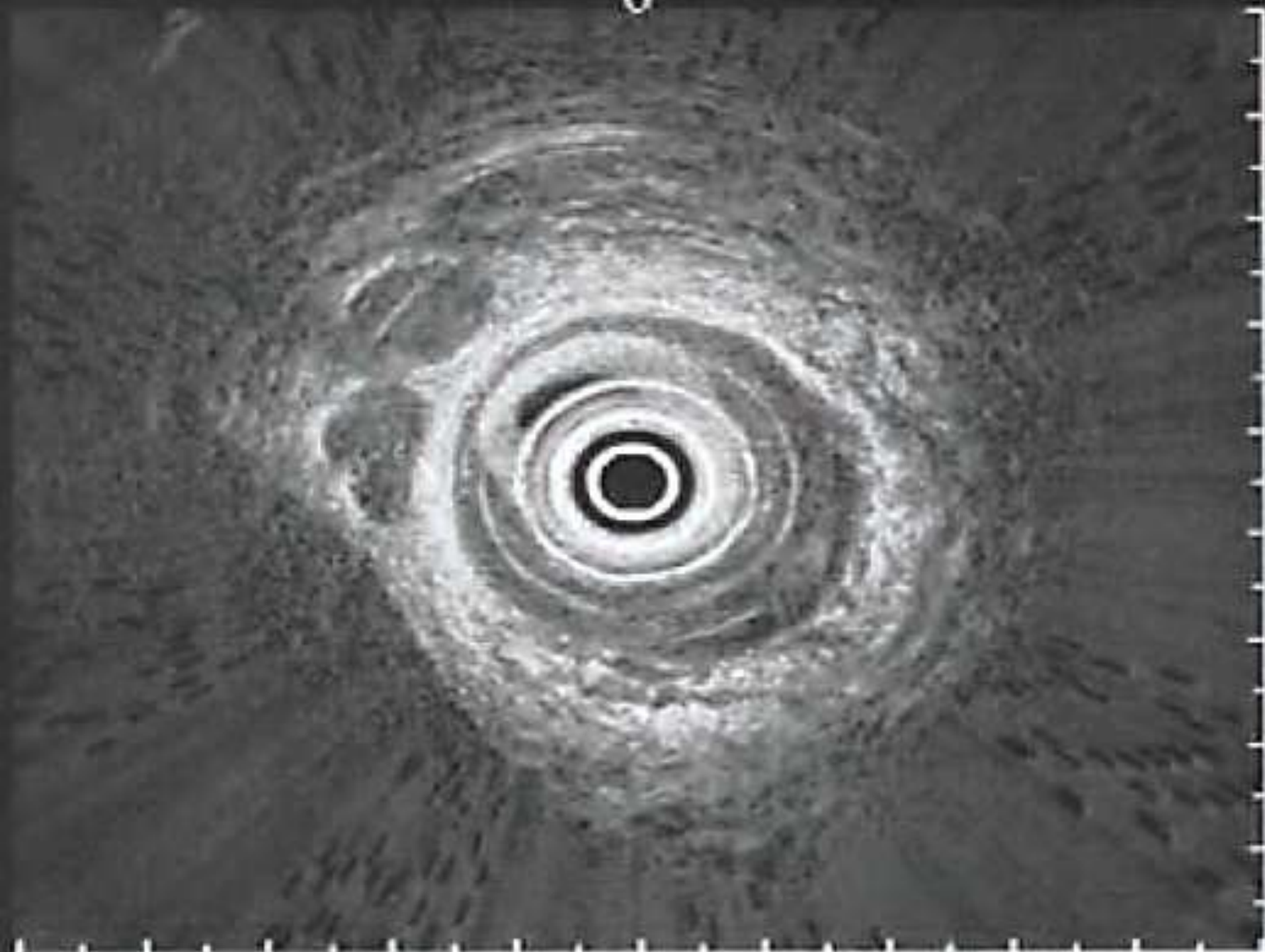
- R.L.N. palsy.( Hoarseness).
- Horner's Syndrome.
- Chronic spinal pain.
- Diaphragmatic paralysis.
- others.:Wt.Loss  $> 20\%$ , Loss of Appetite.
- Cx L.N.

# Investigations

- Hematology & Biochemistry.
- C.X.R.
- Ba swallow.
- Endoscopy + Biopsy.
- Bronchoscopy.
- Endoluminal Ultrasonography.
- Abdominal Ultrasonography.
- PET + CT scan.
- MRI.
- Explorative Laparoscopy.( Trans peritoneal seeding).  
Ca cardia.



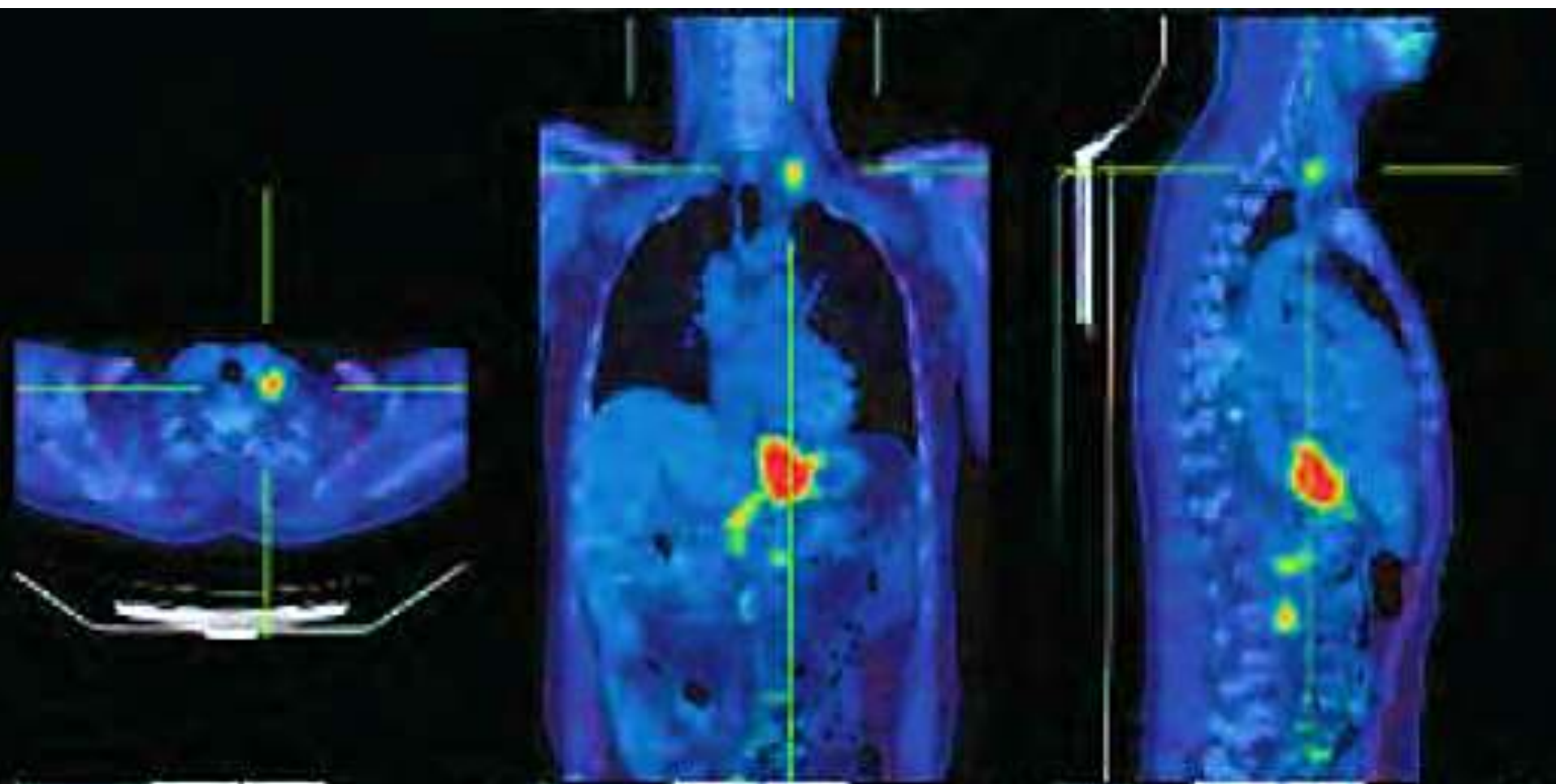












# Assessment and Evaluation

- Staging. ( advancement of the disease) ( T.N.M.)
- Grading.( Histopathology)
- Operability.( Fitness)
- Resectability. ( Resection of the tumour)
- Curability. ( Complete free of malignancy)
- palliative management. ( Symptomatic Relief )

## Treatment of carcinoma of the oesophagus

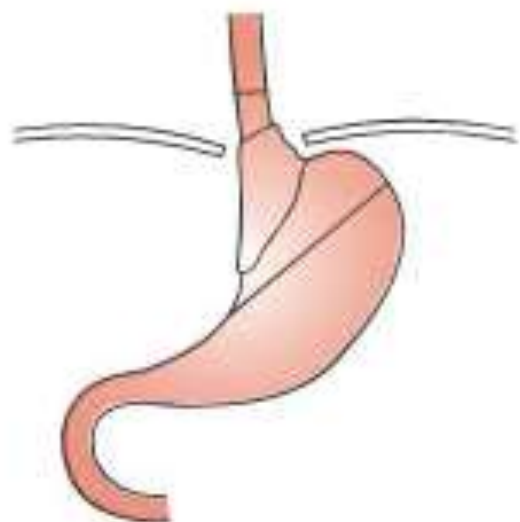
- Radical oesophagectomy is the most important aspect of curative treatment
- Neoadjuvant treatments before surgery may improve survival in a proportion of patients
- Chemoradiotherapy alone may cure selected patients, particularly those with squamous cell cancers
- Useful palliation may be achieved by chemo-/radiotherapy or endoscopic treatments

# Modalities of Treatment

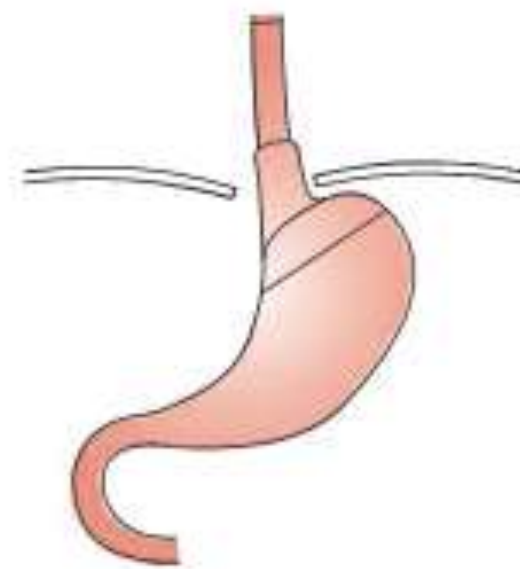
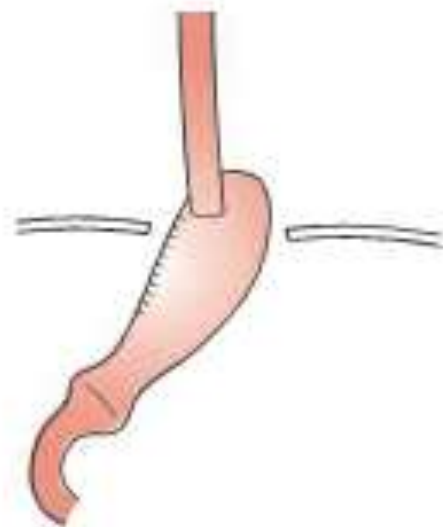
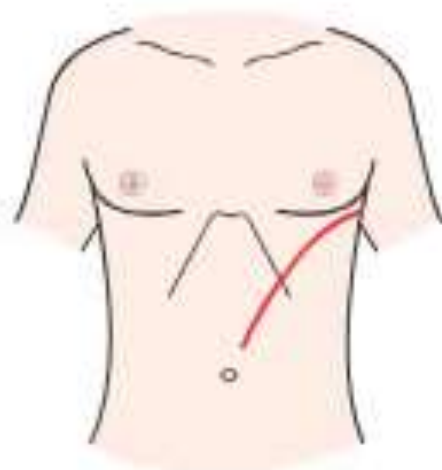
- Surgery ( EMR T1a, Radical surgery Esophagectomy +L.N. clearance. ).
- Chemotherapy.( Neoadjuvant & adjuvant ).
- D.X. Therapy ( Radiotherapy ).
- Chemotherapy.
- Radiofrequency Ablation.
- Palliative ( Thermal recanalization, Stent ).

# Esophagectomy

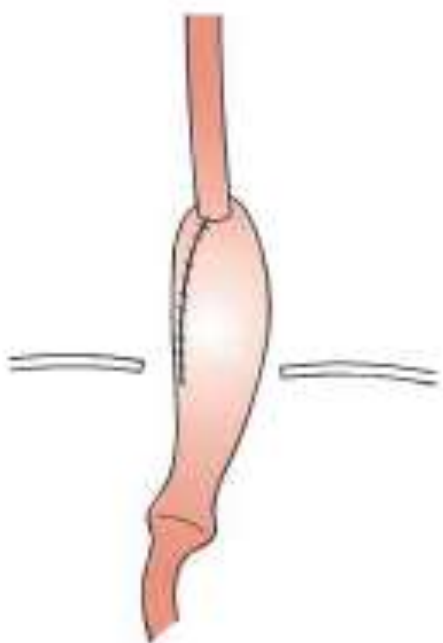
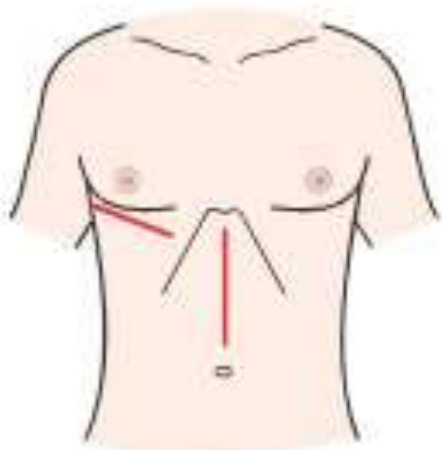
- 10 cm above , 5 cm below .If not achieved then Radiotherapy.
- Transhiatal ( Thoracoabdominal).
- Iver Lewis ( Abdominal then Thoracic).
- Mckoen operation ( Cx ).

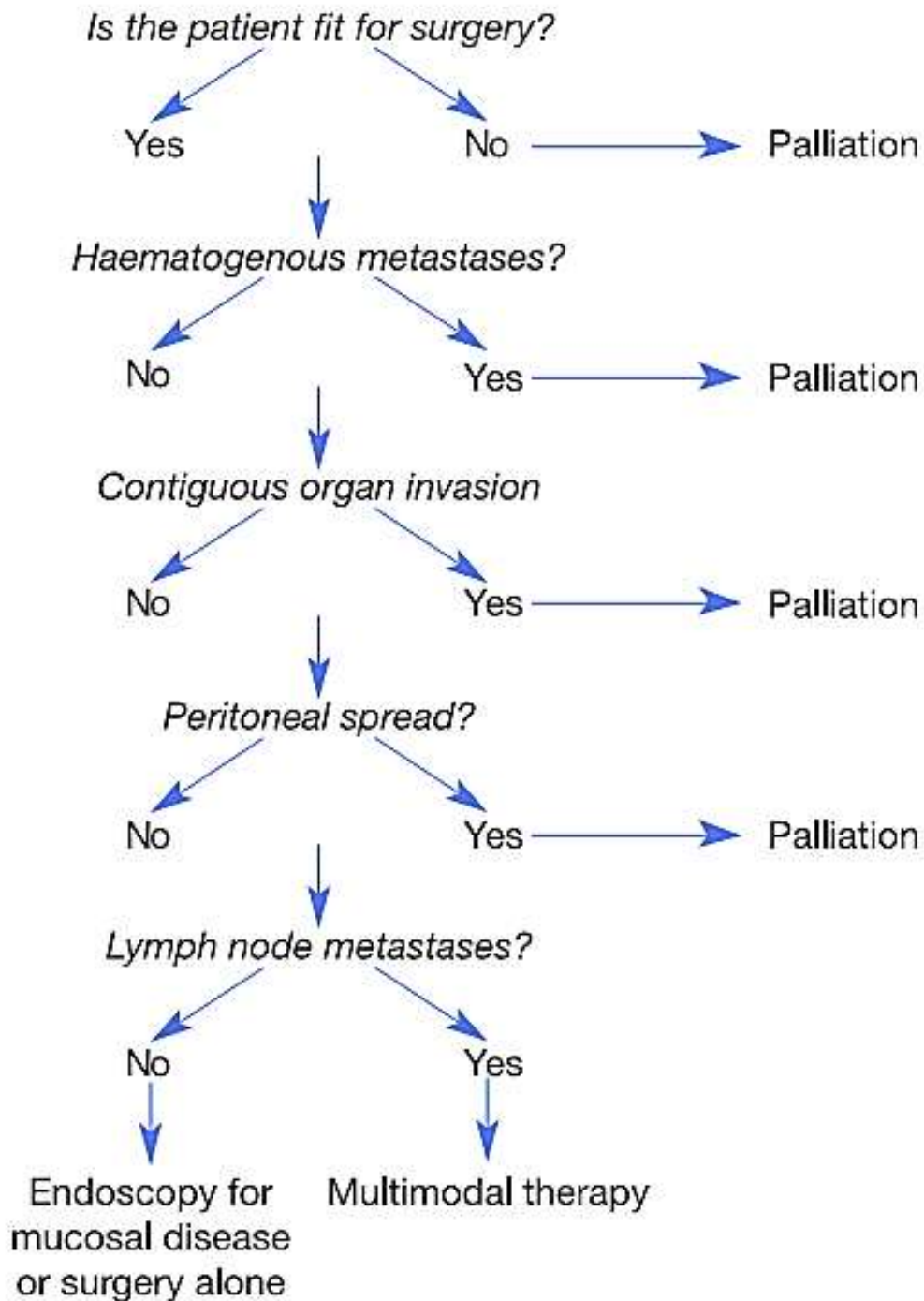


**(a)**



**(b)**







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- **G.O.R.D.**
- **Barrett's Oesophagus.**
- **Hiatus Hernia.**
- **Neoplasm ( Benign and Malignant).& post cricoid tumor.**
- **Motility disorders and diverticulae. ( Achalasia, Webs,**
- **Infections ( candida, Chagas disease)**
- **Crohn's disease.**
- **Plummer vinson disease ( Sideropenic Dysphagea ).**
- **Vascular abnormality.**
- **Varicose vein.**
- **Mediastinal fibrosis.**

# Esophageal Motility disorders

- Pain.( severe spasm).
- Dysphagia.
- Barium swallow.
- Manometry.

# Classification of Motility disorders

- Pharyngo-Esophageal
- Body of the esophagus.
- L.O.S.

**TABLE 62.3** General classification of oesophageal motility disorders.

**Disorders of the pharyngo-oesophageal junction**

Neurological – stroke, motor neuron disease, multiple sclerosis, Parkinson's disease

Myogenic – myasthenia, muscular dystrophy

Pharyngo-oesophageal (Zenker's) diverticulum

**Disorders of the body of the oesophagus**

Diffuse oesophageal spasm

Nutcracker oesophagus

Autoimmune disorders – especially systemic sclerosis (CREST)

Reflux associated

Idiopathic

Allergic

Eosinophilic oesophagitis

Non-specific oesophageal dysmotility

**Disorders of the lower oesophageal sphincter**

Achalasia

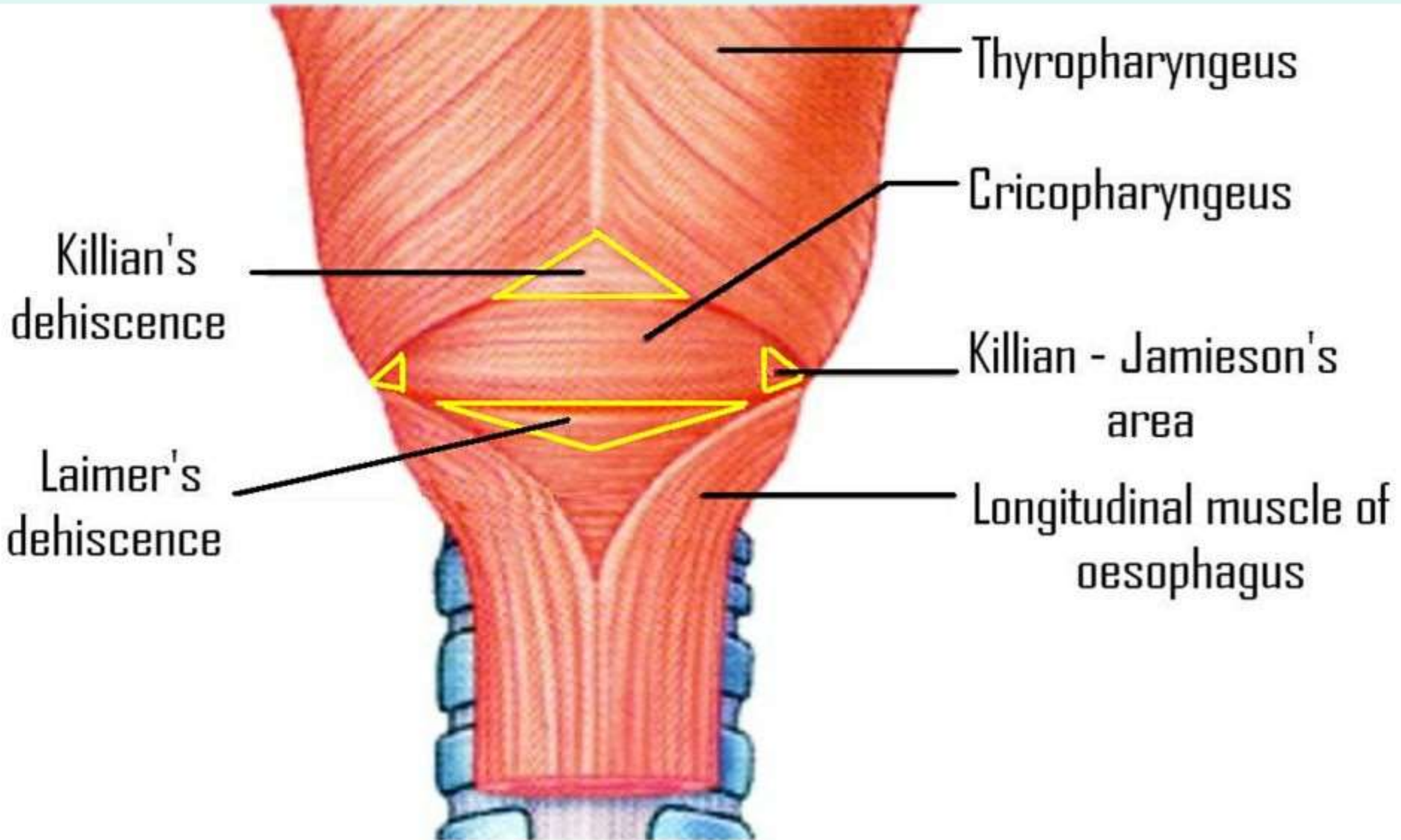
Incompetent lower sphincter (i.e. GORD)

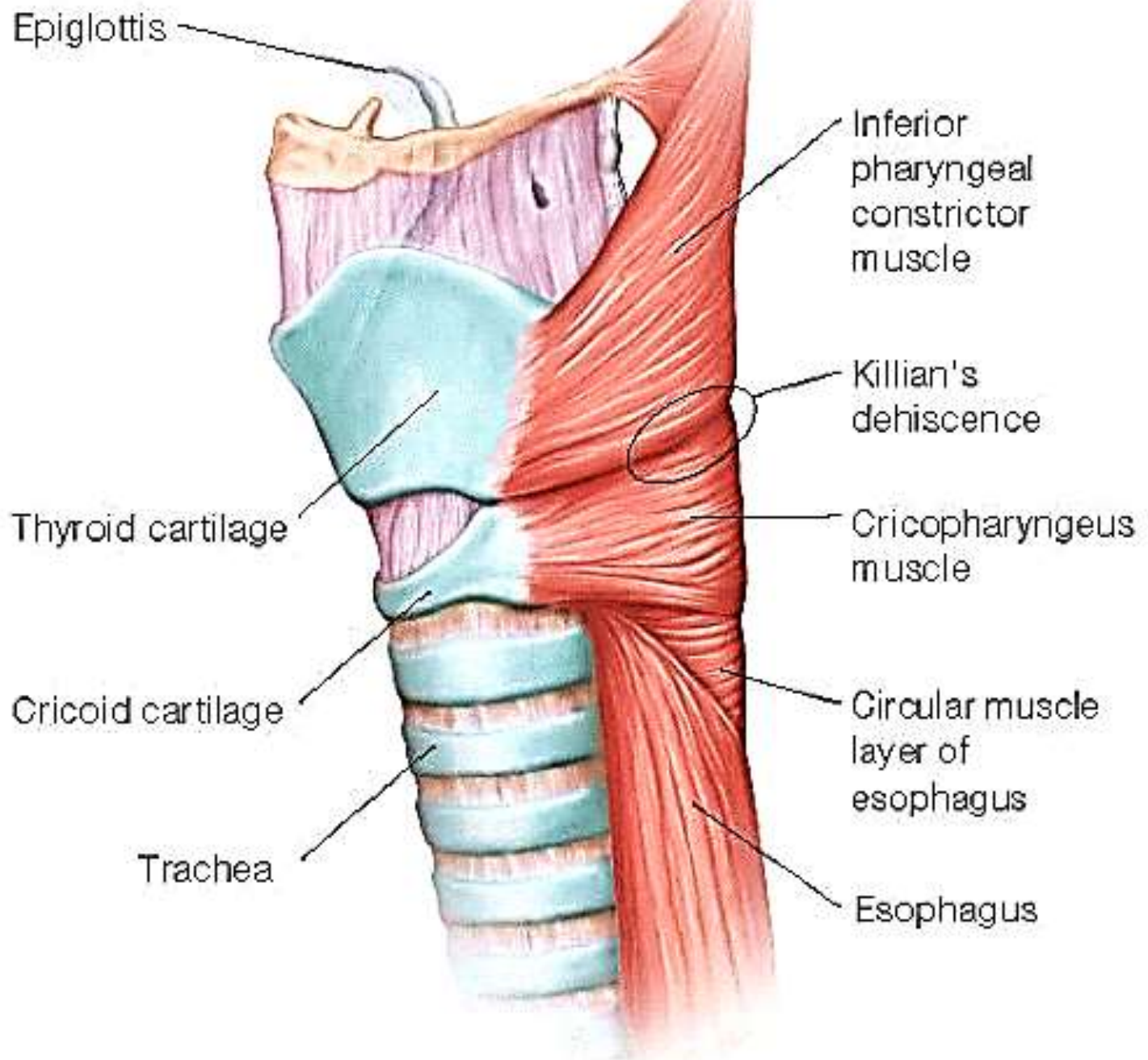
# Pharyngeal Pouch( Zenker's diverticulum)

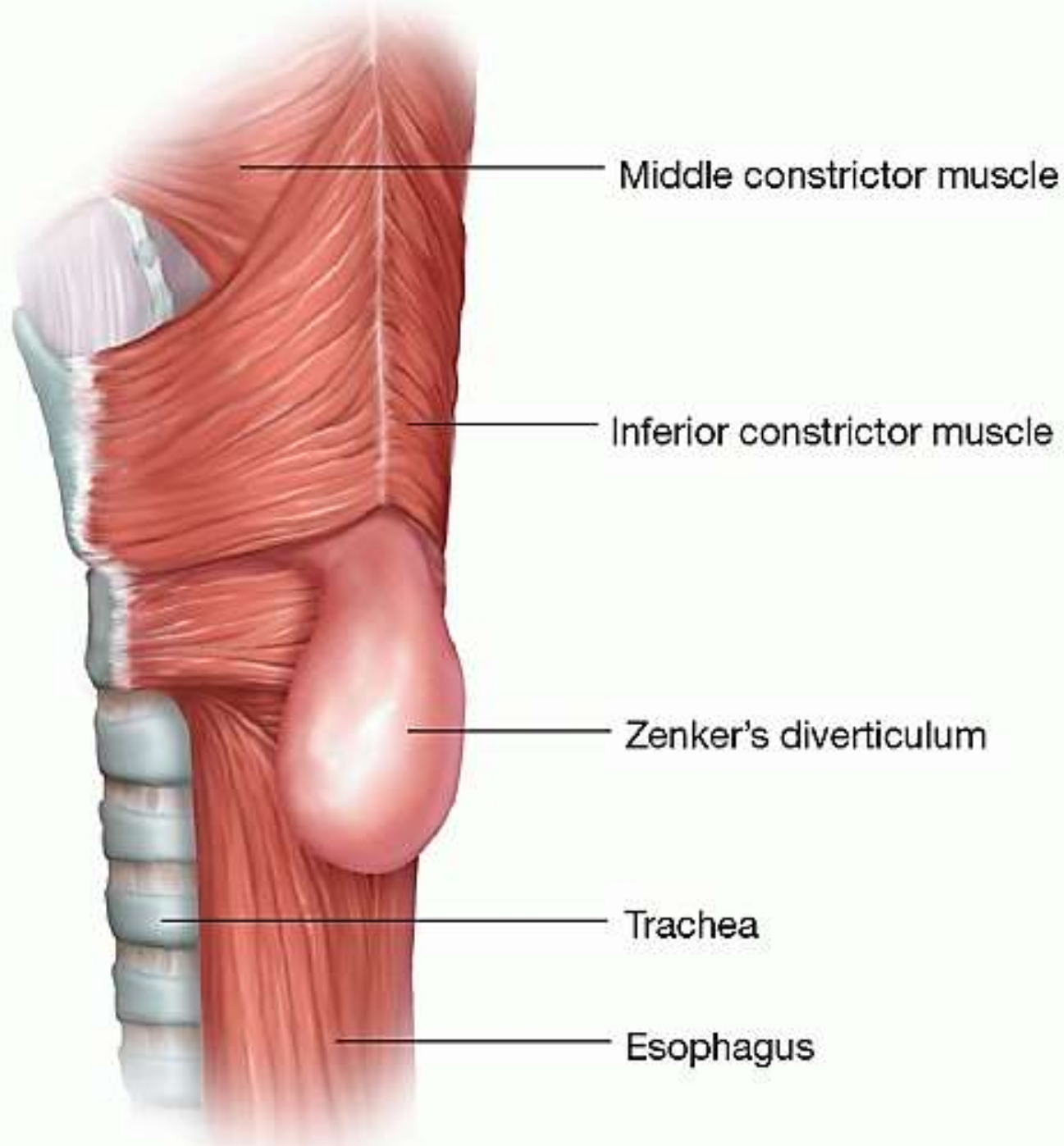
- Underlying neurological disorder.
- Dehiscence of Killian Inferior Pharyngeal m. ( oblique and horizontal fibers.
- Incoordination.
- Pharyngeal dysphagia and halitosis.
- Then Esophageal dysphagea.
- Ix: Endoscopy, Ba study.
- Rx: Endoscopy with linear cutting stapler ( diverticulo-esophagectomy).

Open surgery ( Pouch excision/ suspension ( diverticulopexy ) +/- cricopharyngeus myotomy.

# Weak spots b/w muscles







Middle constrictor muscle

Inferior constrictor muscle

Zenker's diverticulum

Trachea

Esophagus









## **Mid Esophageal diverticulum.**

- Pulsion diverticulum.
- T.O. fistula.
- Mild symptom.

## **Epiphrenic Esophageal diverticulum.**

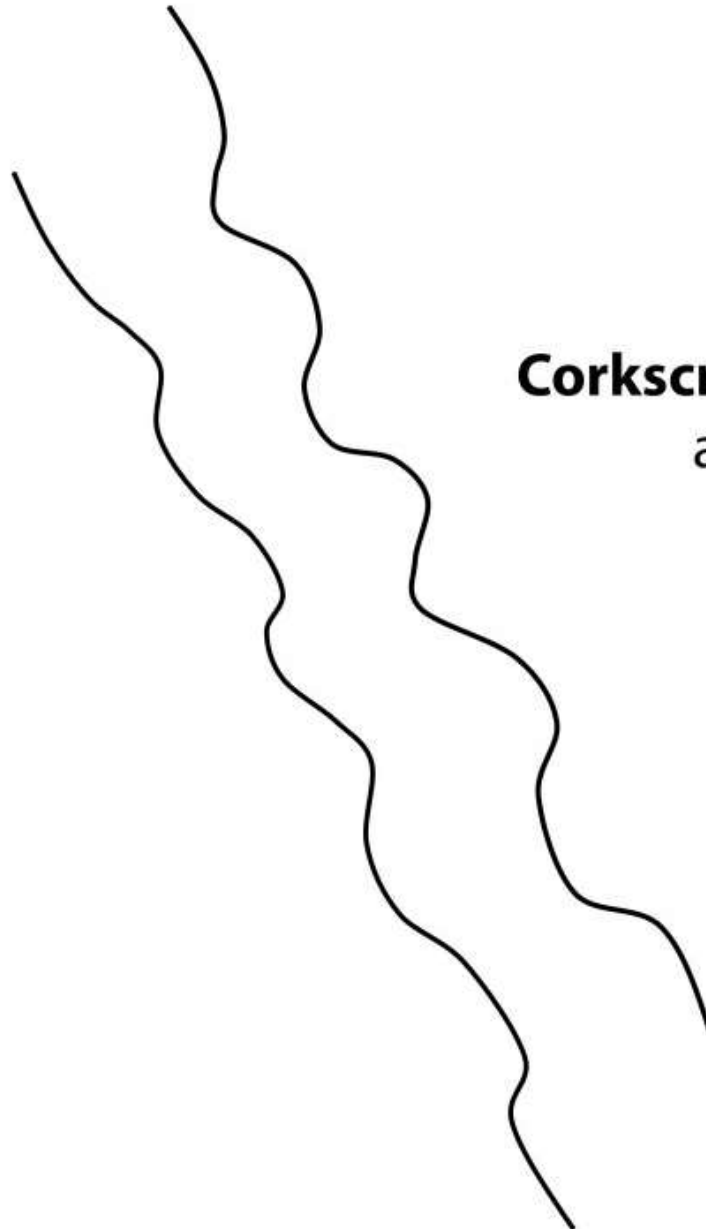
- Pulsion diverticulum.
- Lower Esophagus above the diaphragm.
- If large ( Excision and myotomy).

# Disorder Body of the Esophagus

- Diffuse esophageal spasm
- Chest pain , dysphagia.
- Distal 2/3<sup>rd</sup> .
- Ba study (corkscrew" or "rosary bead esophagus“)( where normal peristalsis is interrupted by many tertiary (non-propulsive) contractions occurring in the distal oesophagus
- Manometry.
- Rx: Medication : PPI, Ca.C.B., Vasodilators, Endoscopic dilatation.
- Surgery : Extended esophageal myotomy.



# Diffuse oesophageal spasm



**Corkscrew or Shis Kabab**  
appearance



Incoordinated peristalsis with simultaneous contraction of the oesophagus at multiple points





10 c

R

# ( Jack hammer )/ (Nutcracker)/ Hypercontractile Esophagus

- This condition is primarily diagnosed with manometry with high intra-oesophageal pressure and normal peristalsis. Most patients will have a normal barium swallow.
- Ix: Ba study, Manometry  $> 8000$  mmHg.
- Rx:





## What is Nutcracker Esophagus or Hypertensive Peristalsis?

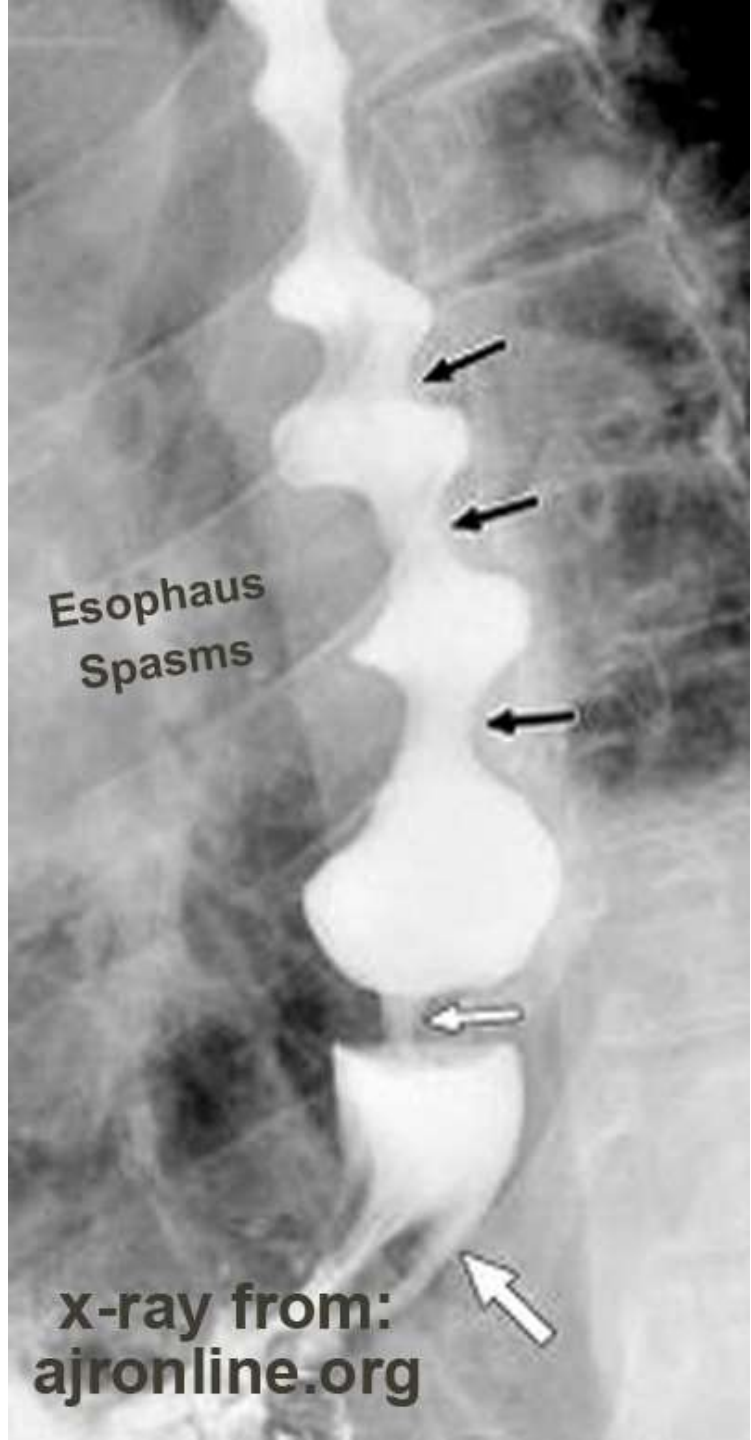
*It is a benign condition and one of the motility disorders of the esophagus where the patient has contractions in the smooth muscles of the esophagus, which occur for excessive duration or amplitude*

For More Information:  
Visit: [www.epainassist.com](http://www.epainassist.com)

Food

Relaxed Muscle

Contracted Muscle



Esophagus  
Spasms

x-ray from:  
ajronline.org

# Diffuse Esophageal Spasm

## Motility Spectrum

- DES
  - simultaneous repetitive contractions of increased duration
- Nutcracker Esophagus
  - hypertensive contractions (amplitude  $>180$  mmHg) and increased duration
- Vigorous Achalasia
  - simultaneous repetitive contractions with abnormal LES relaxation

# Achalasia

- Middle life.
- Selective loss of inhibitory ganglionic cells in the myenteric plexus.
- Non relax LOS and absent peristalsis ( body).
- Not reflux.
- Regurgitation, Dysphagia.
- Dx : Adenocarcinoma of the cardia.

# Diagnosis

- History.
- Plain CXR .( megaesophagus).
- Ba Study. ( bird's beak/ tail rat )
- Endoscopy.





# ACHALSIA CARDIA

- Barium swallow showing dilatation of the esophageal body

\*With short segment stricture.

\* A "bird-peak " like tapering of the esophagus at the GE junction. OR

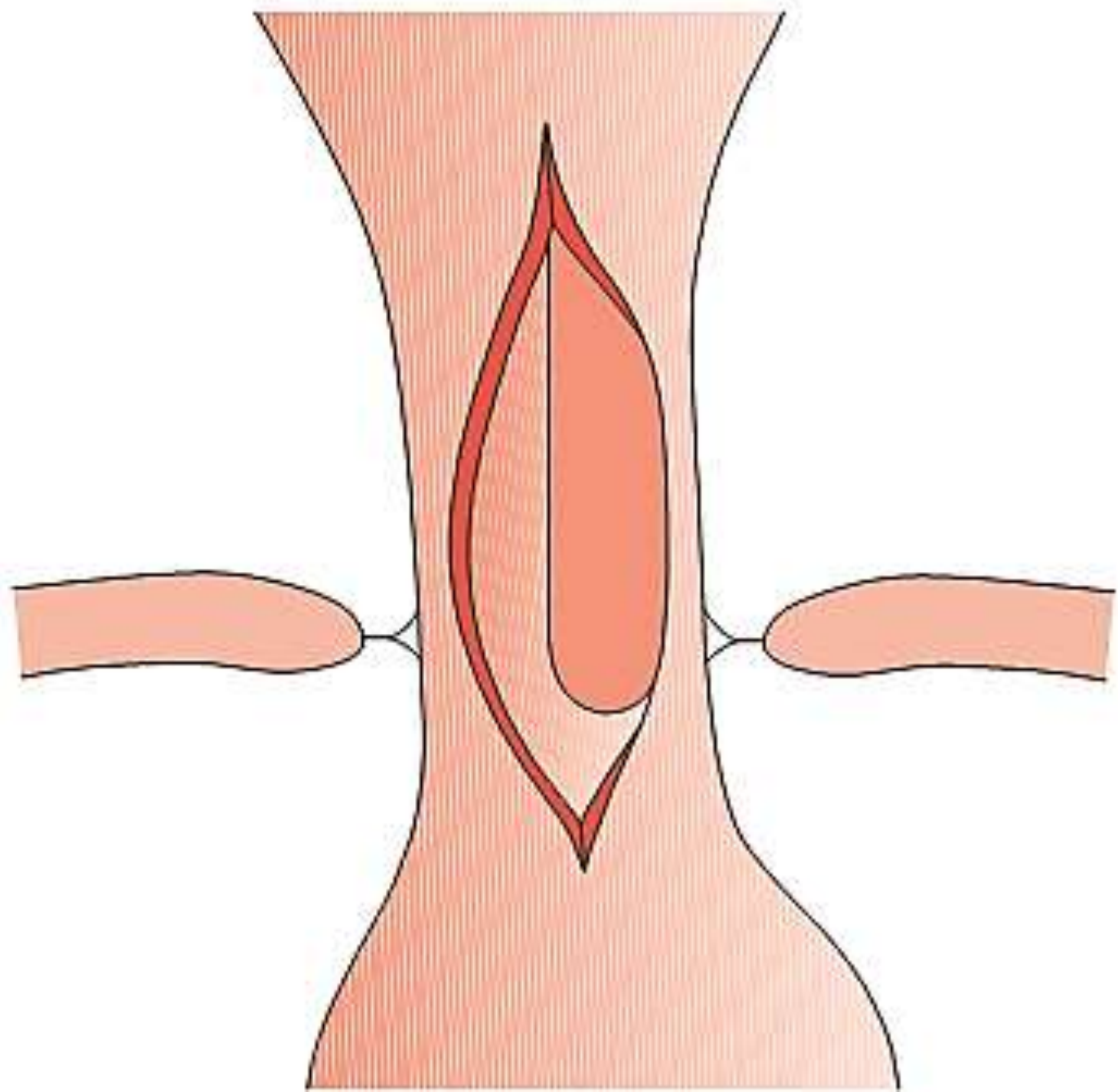
\*A Sigmoid " Mega esophagus



# Treatment

- Medical: ( Ca<sup>+</sup>C.B., Botulinum toxin).
- Endoscopic Pneumatic dilatation.
- Surgical: Heller myotomy ( open, laparoscopic or Endoscopic (POEM )



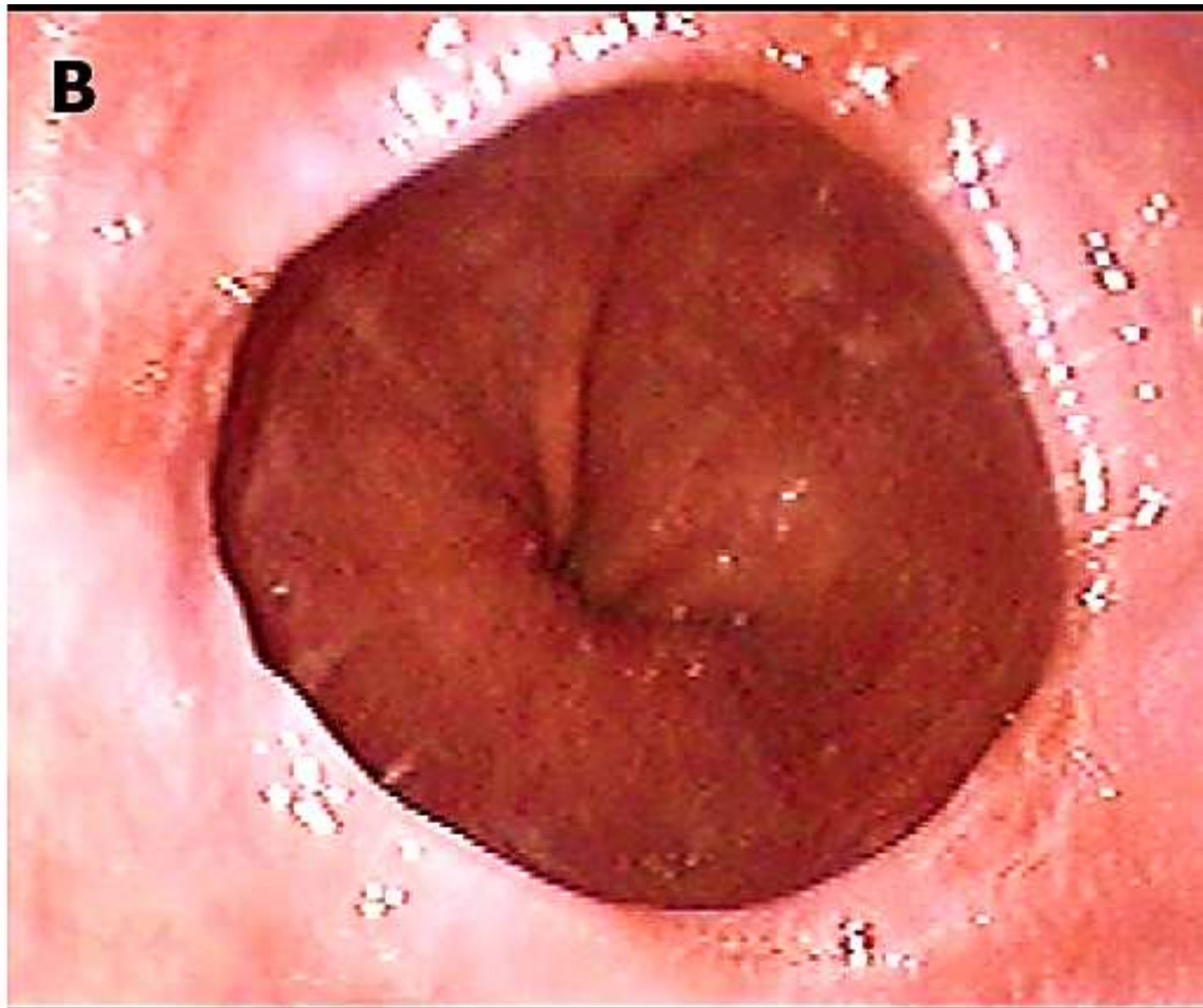




Heller – Dor Operation

# Schatzki's Ring

- Circular ring in the distal esophagus ( S.C.J.).
- Fibrous tissue
- Incidental.
- In association with reflux disease.
- Dysphagea.
- Ix: Ba study ( constriction), Endoscopy.
- Rx : dilatation with anti-reflux medication.





Name:

nr: 11111111

Geburtsdatum:

24/05/1981

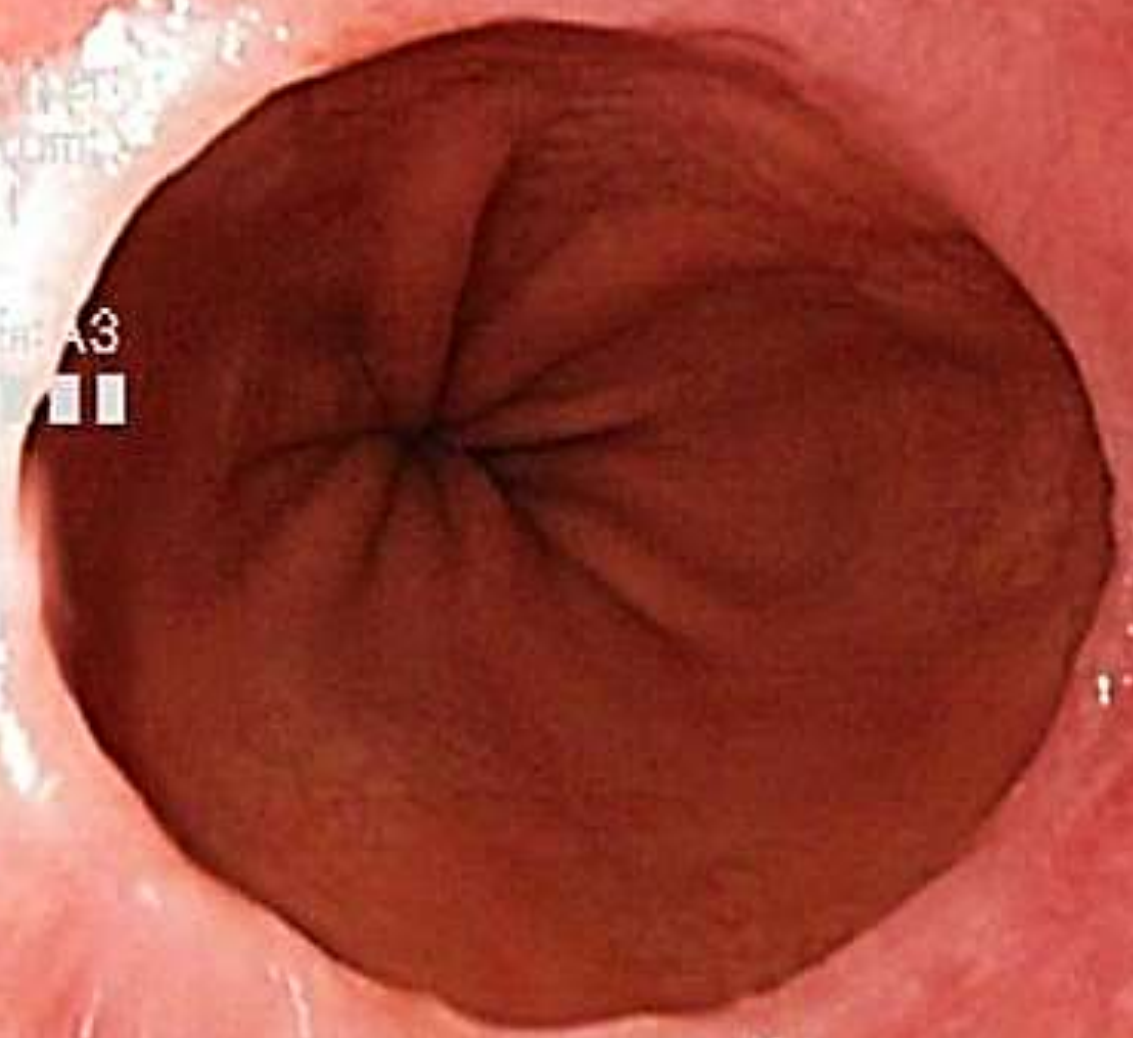
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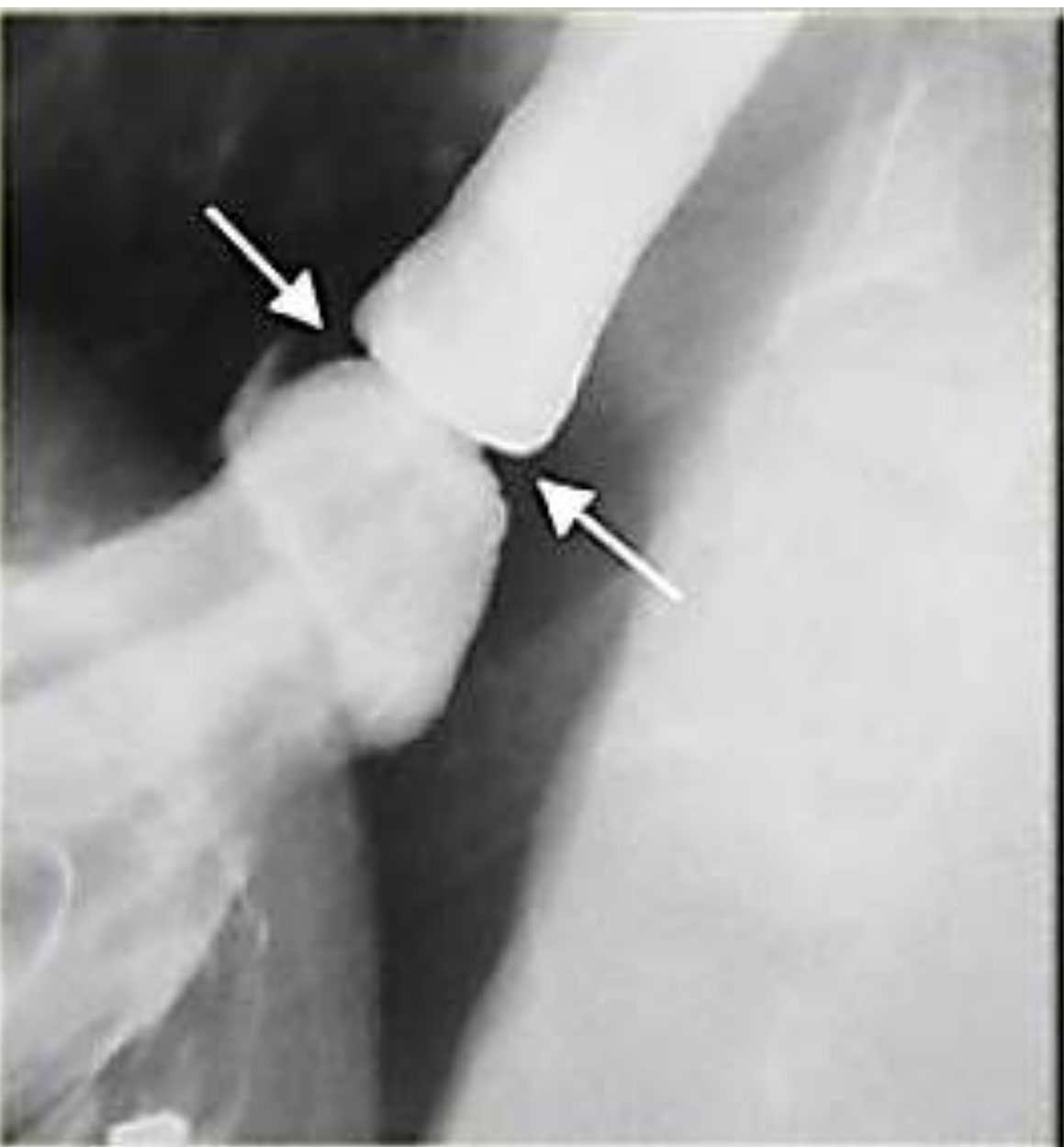
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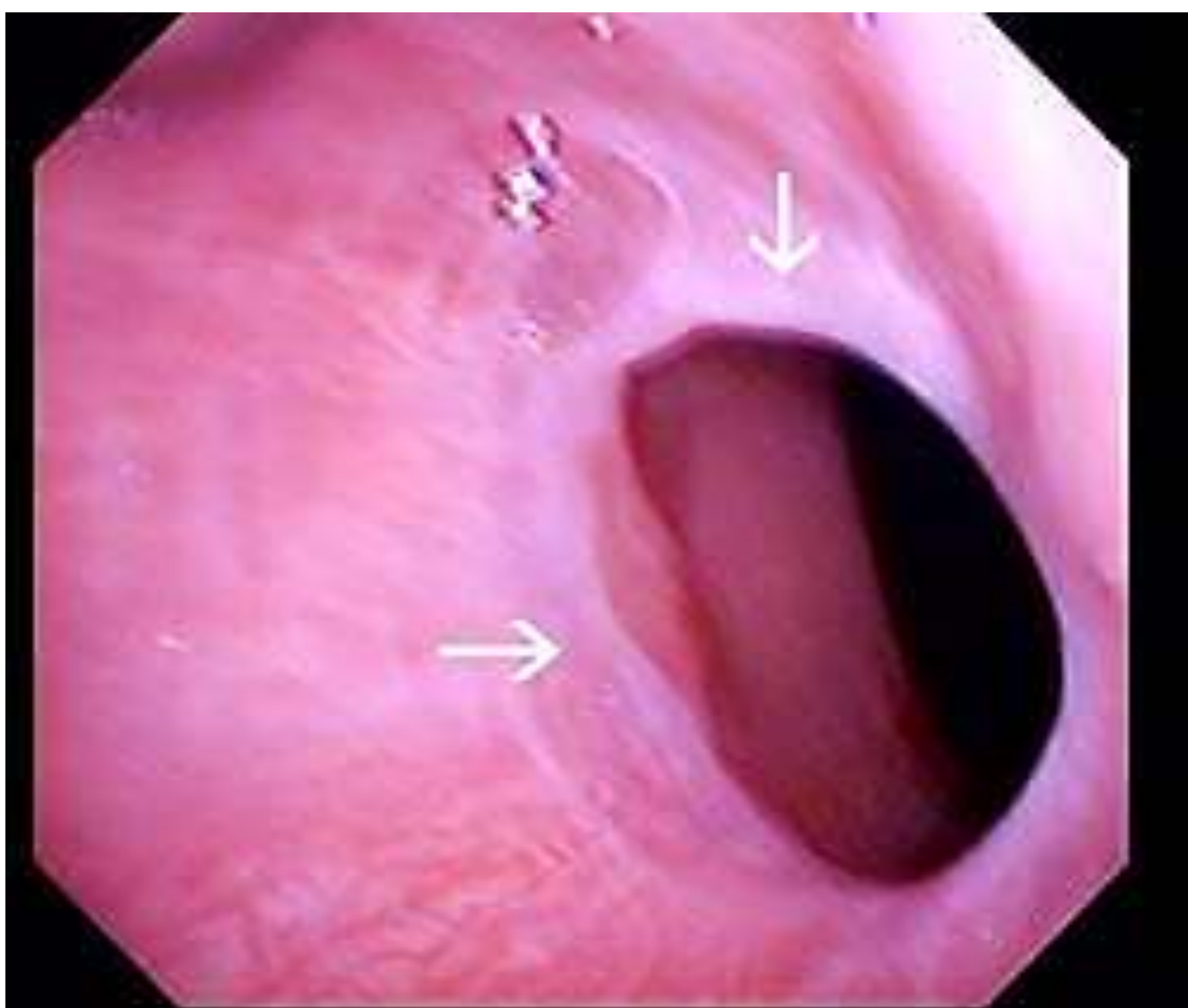
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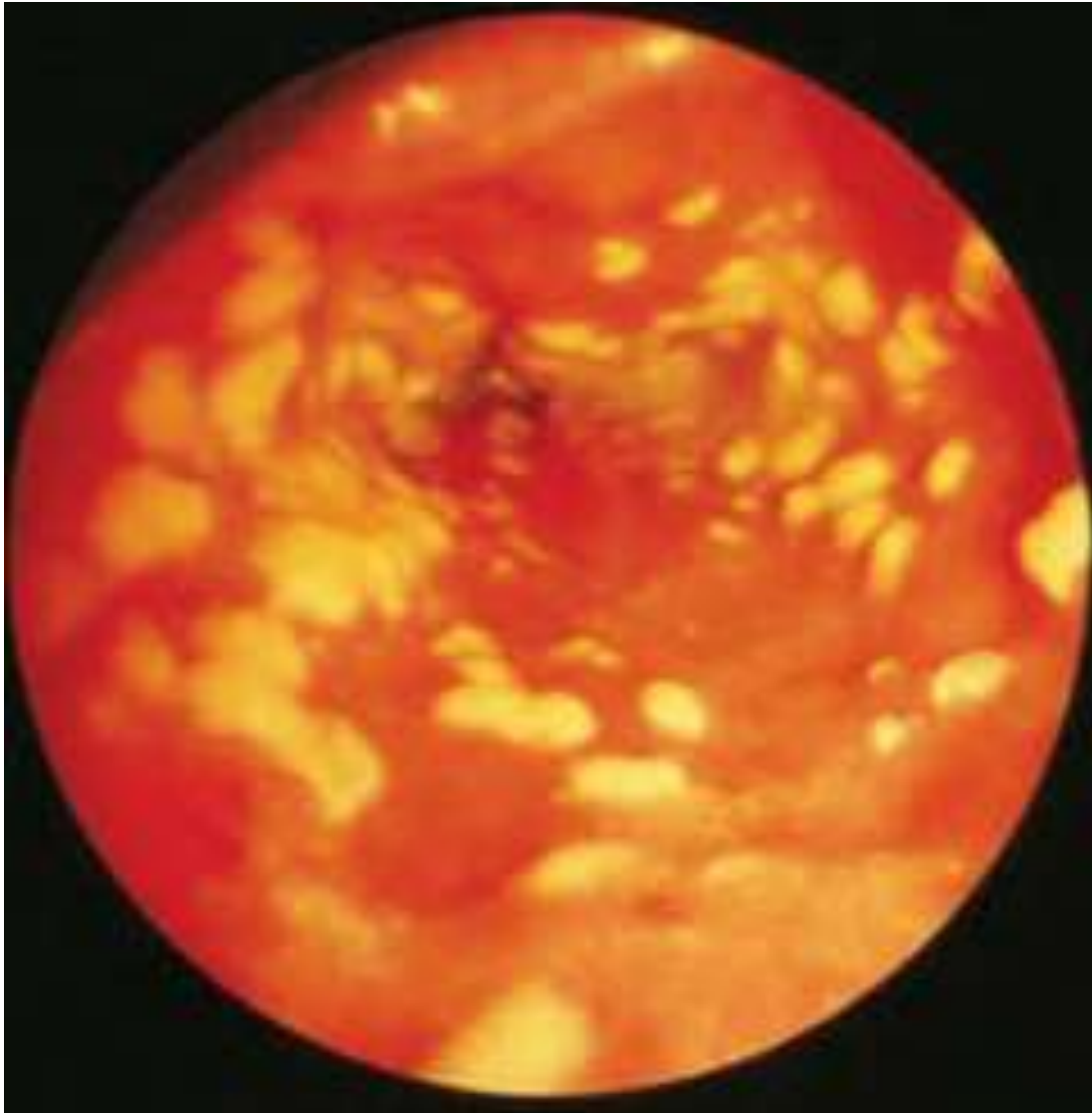


# Plumer Vinson Syndrome

- Sideropenic dysphagia.
- Postcricoid web.
- Iron def.An.
- Upper and middle esophagus.
- Precancerous.
- F > M.
- Ix: Endoscopy, Ba Study.
- Rx: Endoscopic dilitation.



# Esophageal Candidiasis





- **Congenital abnormalities.**
- **Foreign bodies.**
- **Perforation( spontaneous Barotrauma ),Pathological,Penetrating injury, Foreign body,Instrumental ) (Chemical, Physical , mechanical and Ca.,.**
- **Mallory Weiss Syndrome.**
- **Corrosive Injury.**
- **Drug induced Injury.**
- **G.O.R.D.**
- **Barrett's Oesophagus.**
- **Hiatus Hernia.**
- **Neoplasm ( Benign and Malignant).& post cricoid tumor.**
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- **Crohn's disease.**
- **Plummer vinson disease ( Sideropenic Dysphagea ).**
- **Vascular abnormality.**
- **Varicose vein.**
- **Mediastinal fibrosis.**

# Portal Hypertention

1074

- Is defined as a hepatic venous pressure gradient equal to or greater than 6 mmHg.
- **Hepatic venous pressure gradient (HVPG)** is a clinical measurement of the pressure gradient between the WHVP and the free hepatic venous pressures.
- **Wedged hepatic venous pressure (WHVP)** : reflects not the actual hepatic portal vein pressure but the hepatic sinusoidal pressure.
- HVPG > 12 mmHg ► Variceal Haemorrhage.



# Causes

- **Pre-hepatic** causes : Portal vein thrombosis
- **Hepatic** causes : Cirrhosis
- **Post-hepatic** causes : Budd–Chiari syndrome ( Hepatic vein thrombosis ).

- Mostly esophageal bleeding. Hx of liver cirrhosis .It is is a medical emergency
- Dx : Endoscopy .Liver colour dopplex.
- Tx :
- Ressuscitation.
- Endoscopy : Sclerotherapy
  - Band ligation
  - Clipping
  - Argon plasma coagulation
  - Tissue adhesives injection, forming a solid cast of the injected vessel.
- Balloon tamponad ( Sangstaken – Blackmore tube ).
- Drug : Octreotide → ▼ Portal presuure.
  - Vasopressin, B-blocker
- Acute Shunt : (TIPS): (Transjugular Intrahepatic Portosystemic Shunt )

## Management of bleeding oesophageal varices

- Blood transfusion
- Correct coagulopathy
- Oesophageal balloon tamponade (Sengstaken–Blakemore tube)
- Drug therapy (vasopressin/octreotide)
- Endoscopic sclerotherapy or banding
- Assess portal vein patency (Doppler ultrasound or CT)
- Transjugular intrahepatic portosystemic stent shunts (TIPSS)
- Surgery
  - Portosystemic shunts
  - Oesophageal transection
  - Splenectomy and gastric devascularisation

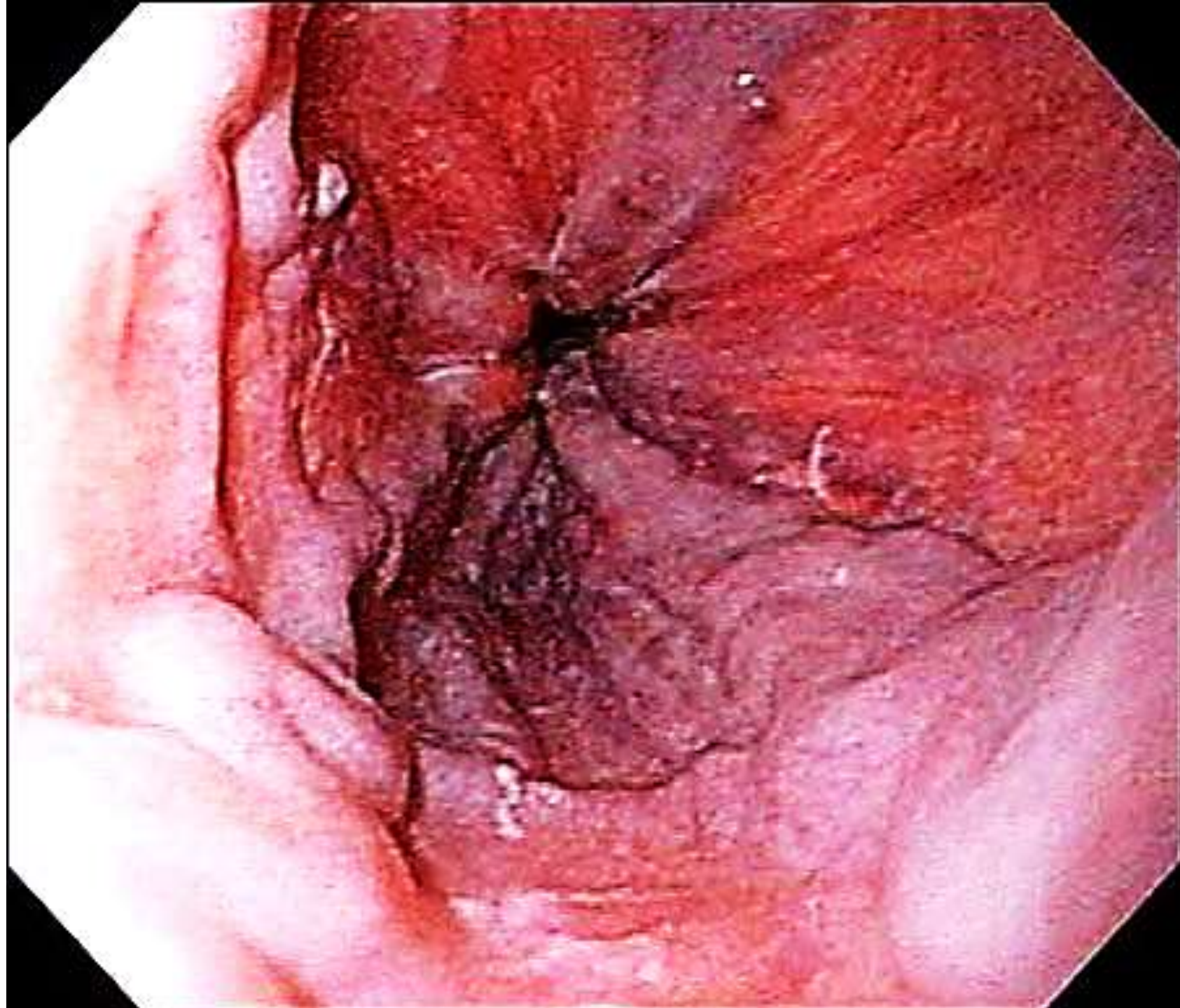
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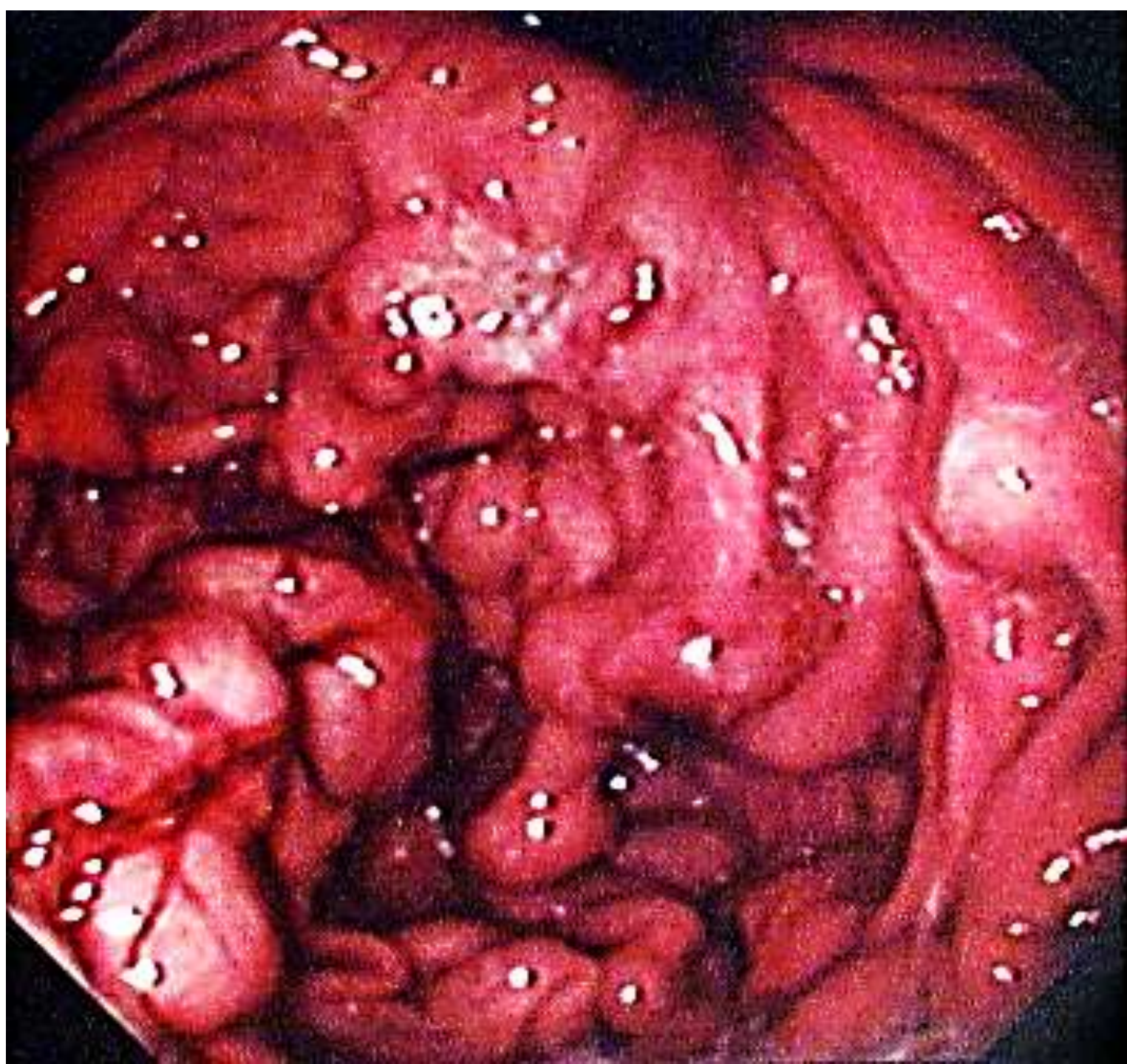
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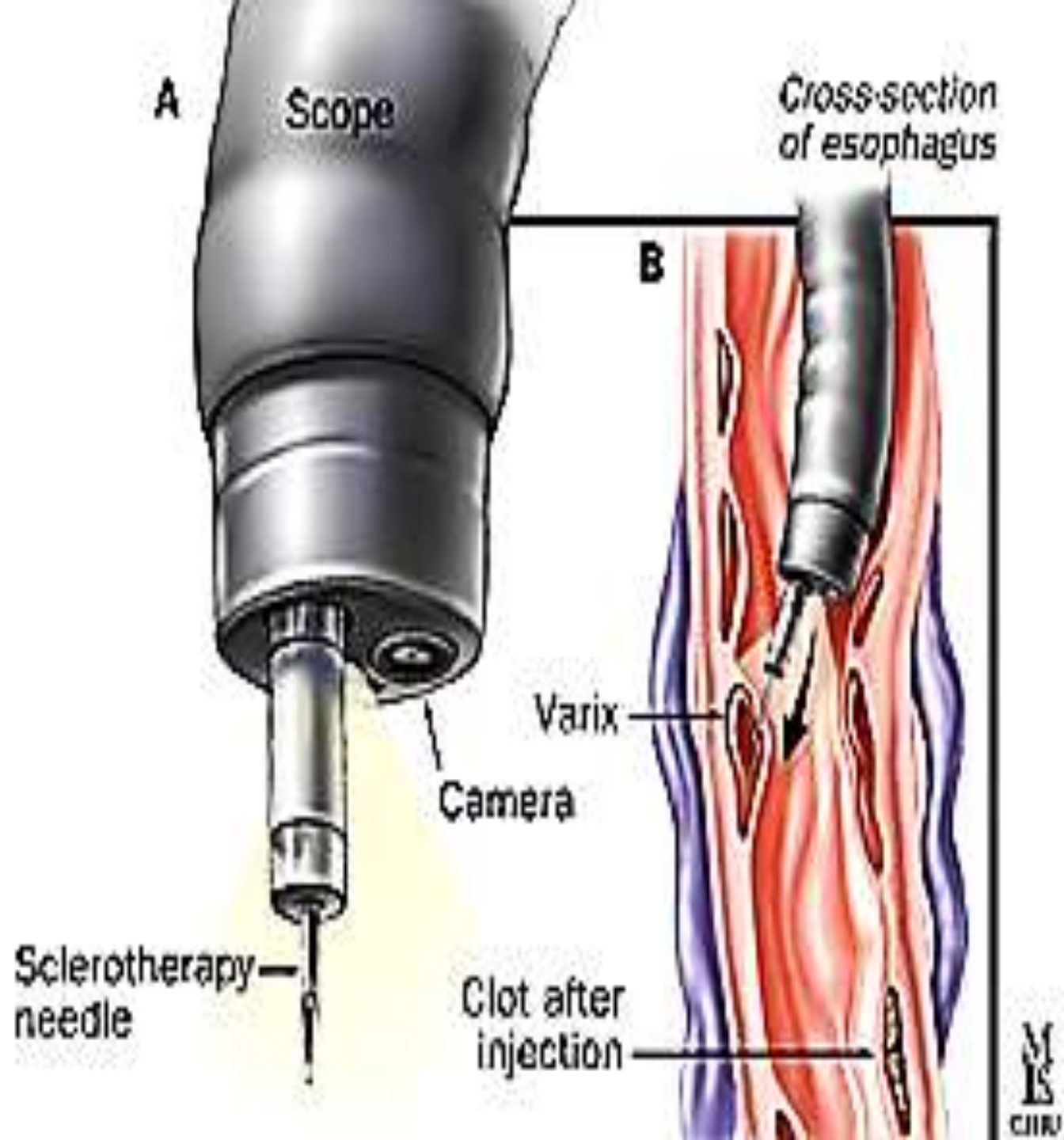
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Scope

**A** Rubber Band  
Ligation  
System<sup>®</sup>



Banded  
varices

YE 5582003I

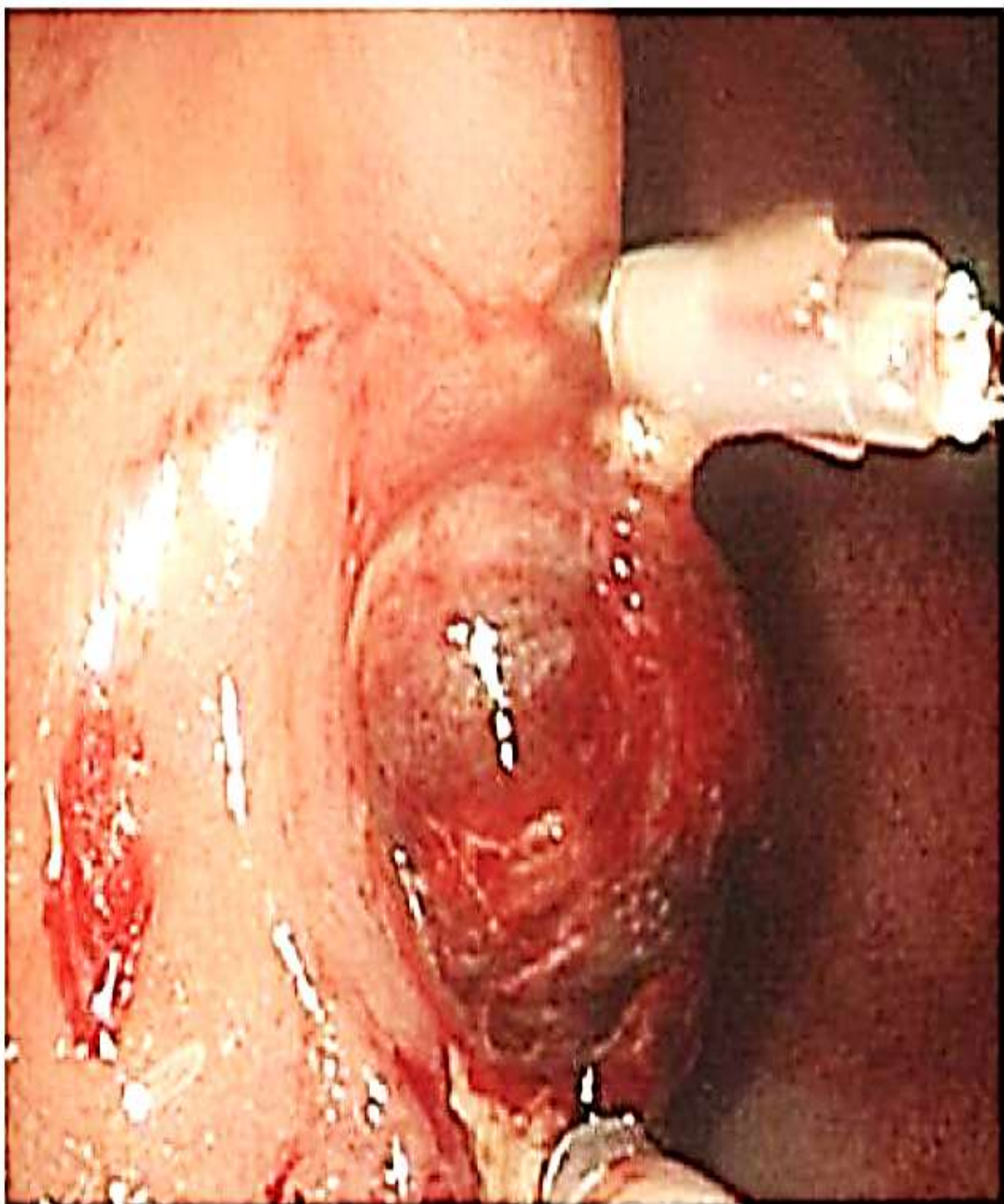
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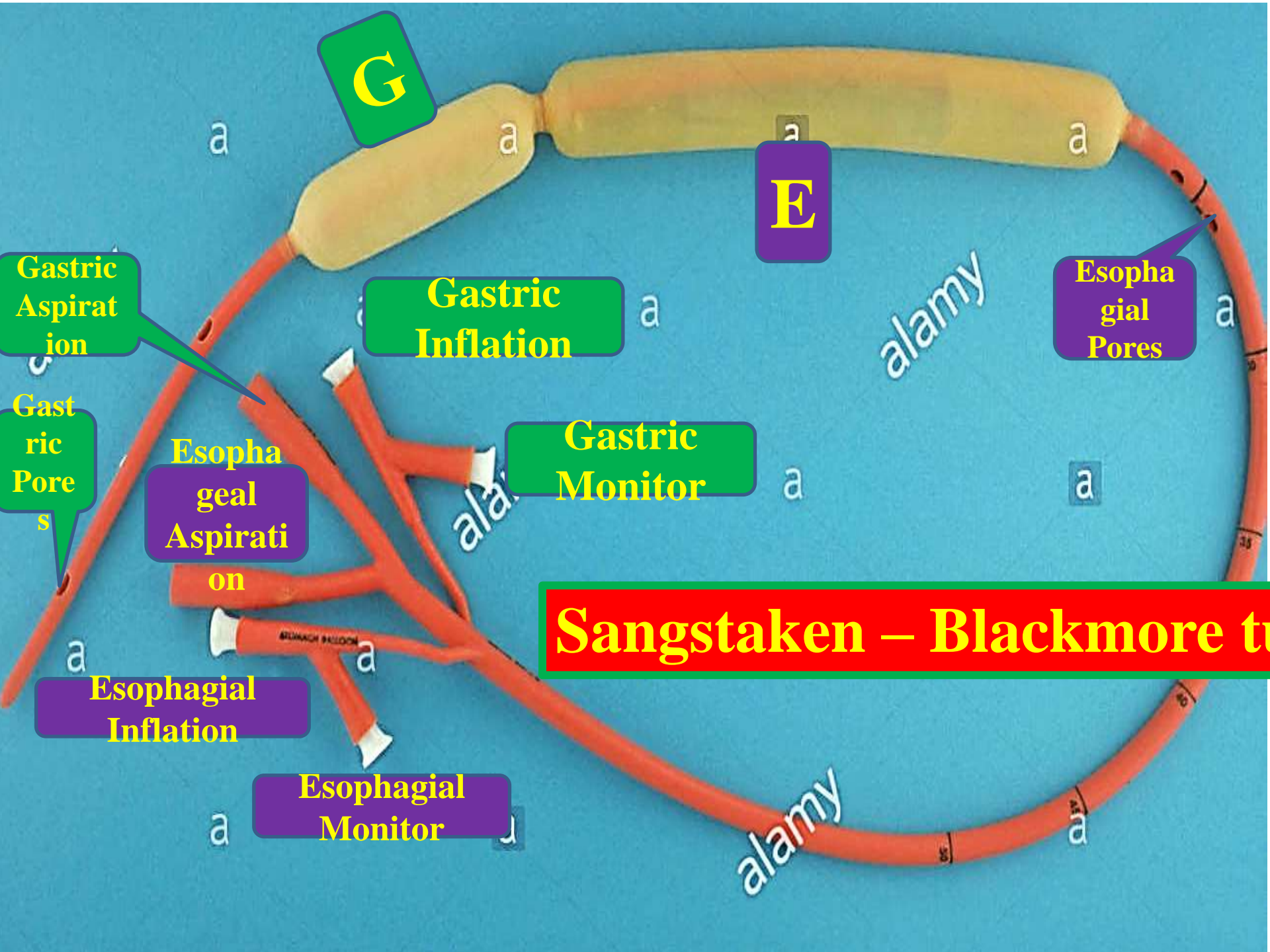
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DR. MURRA SACA.





**G**

**E**

**Gastric Aspiration**

**Gastric Inflation**

**Esophageal Pores**

**Gastric Pores**

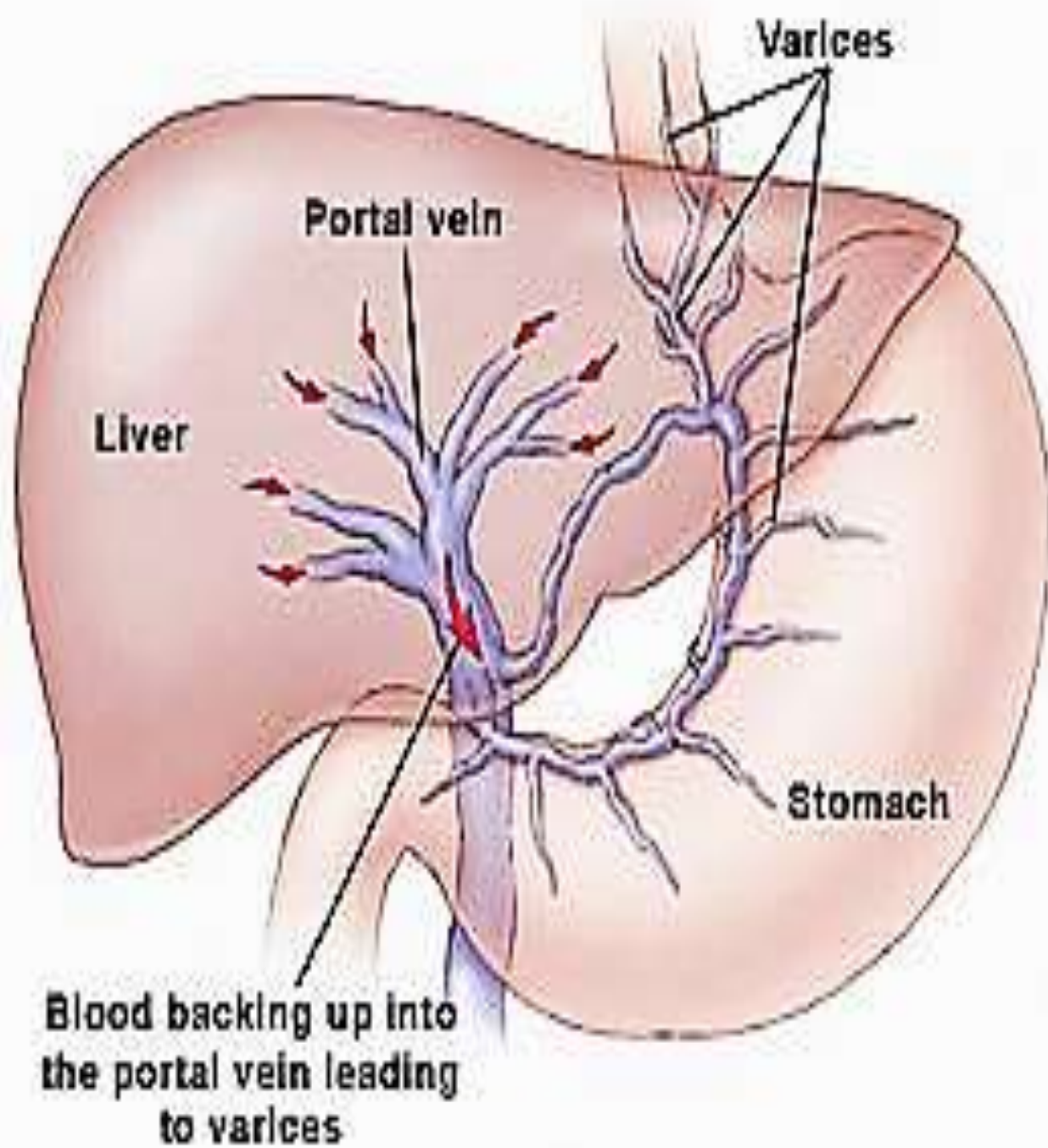
**Esophageal Aspiration**

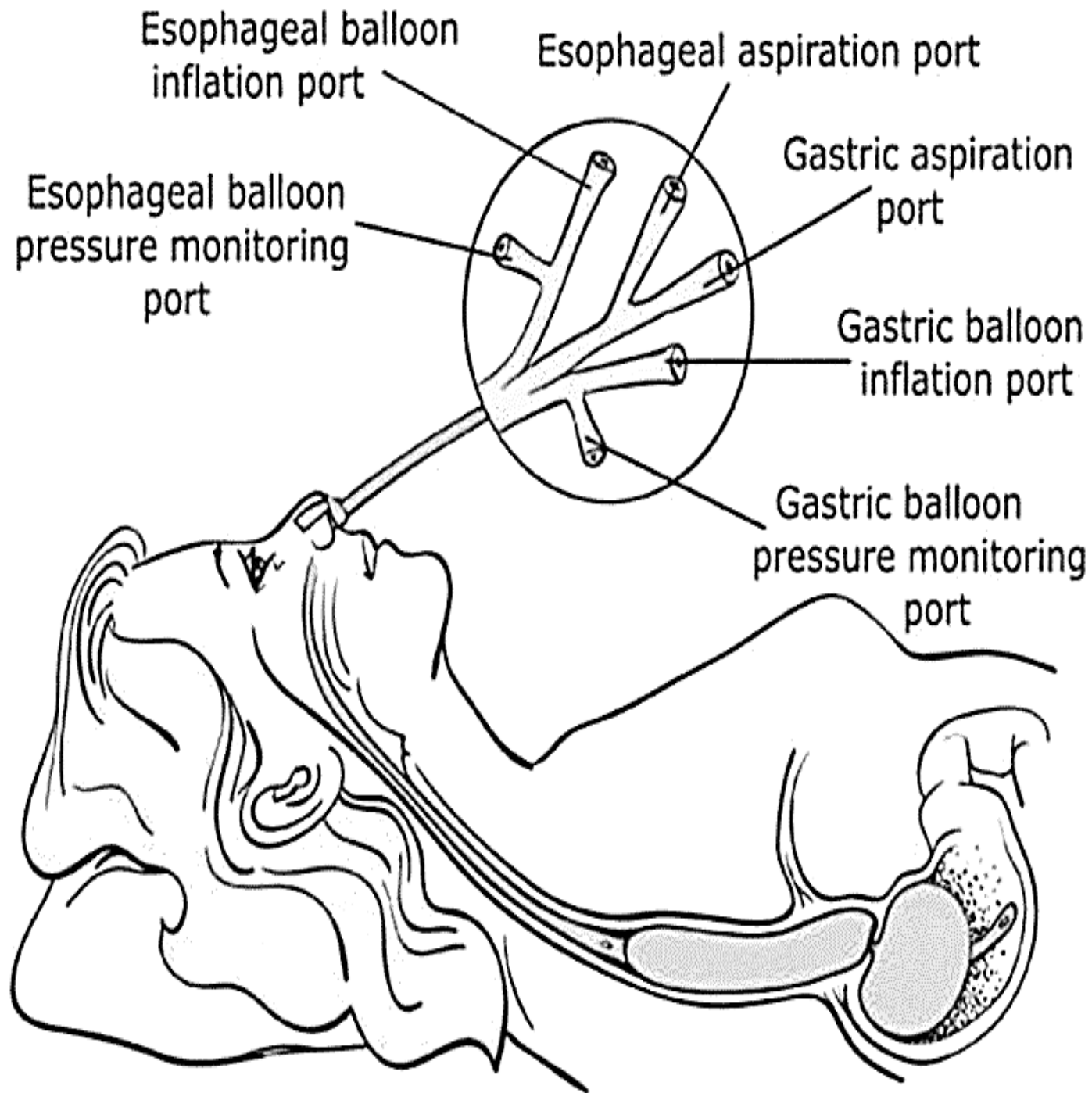
**Gastric Monitor**

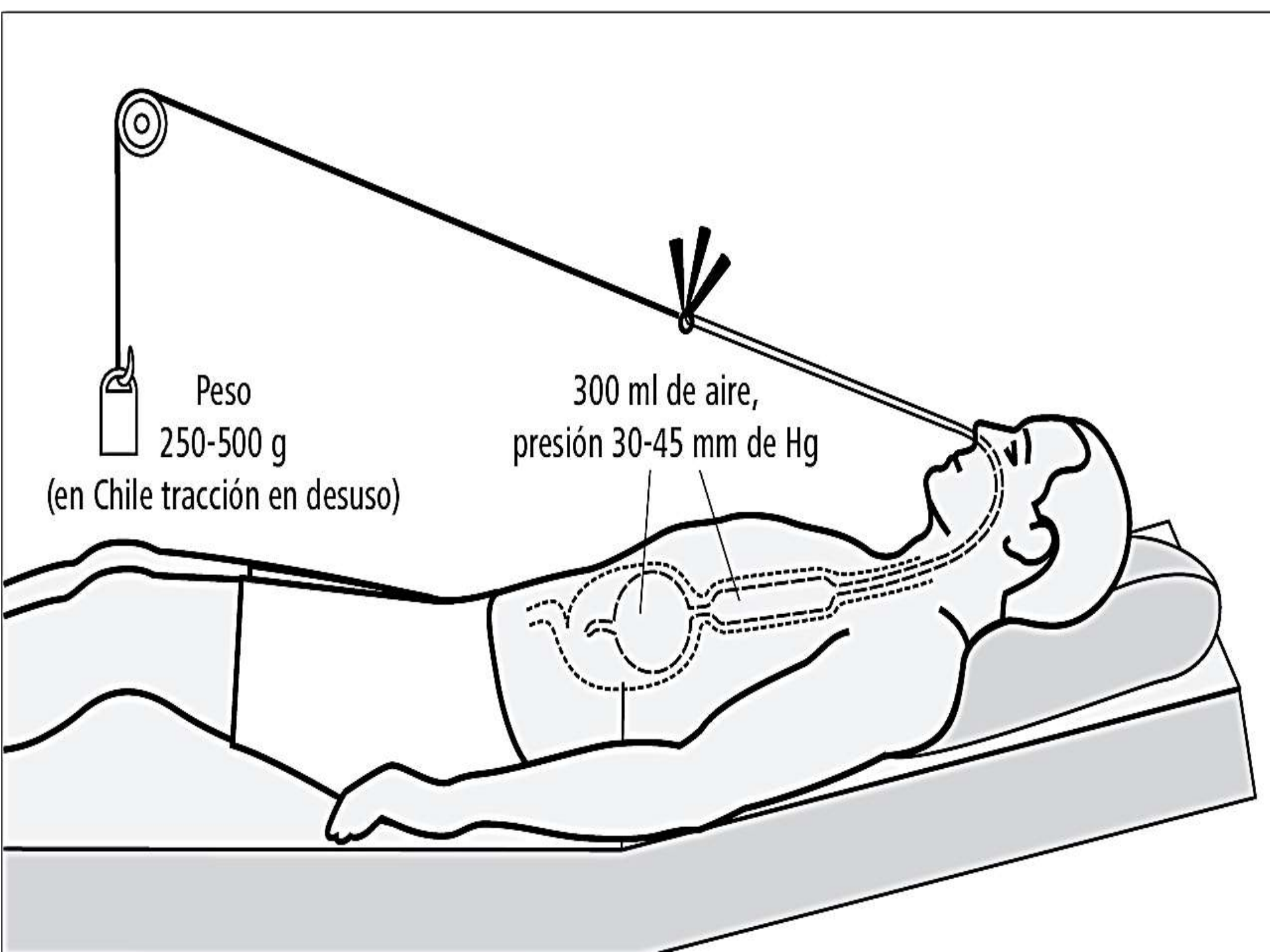
**Esophageal Inflation**

**Esophageal Monitor**

**Sangstaken – Blackmore tube**







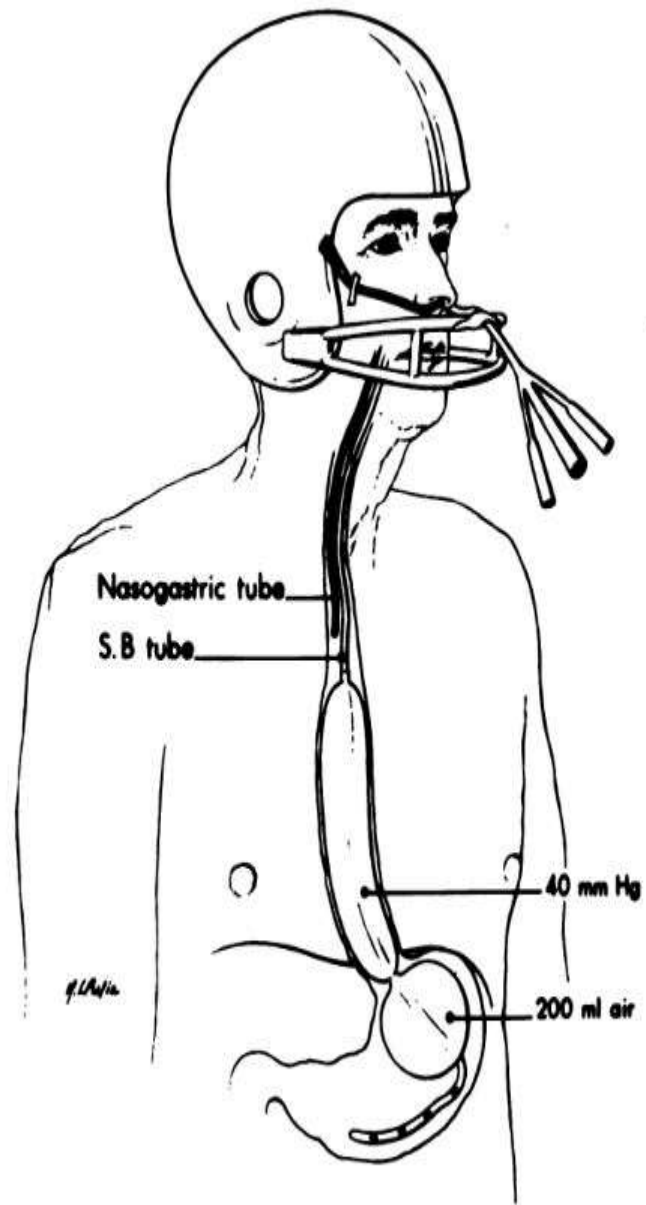
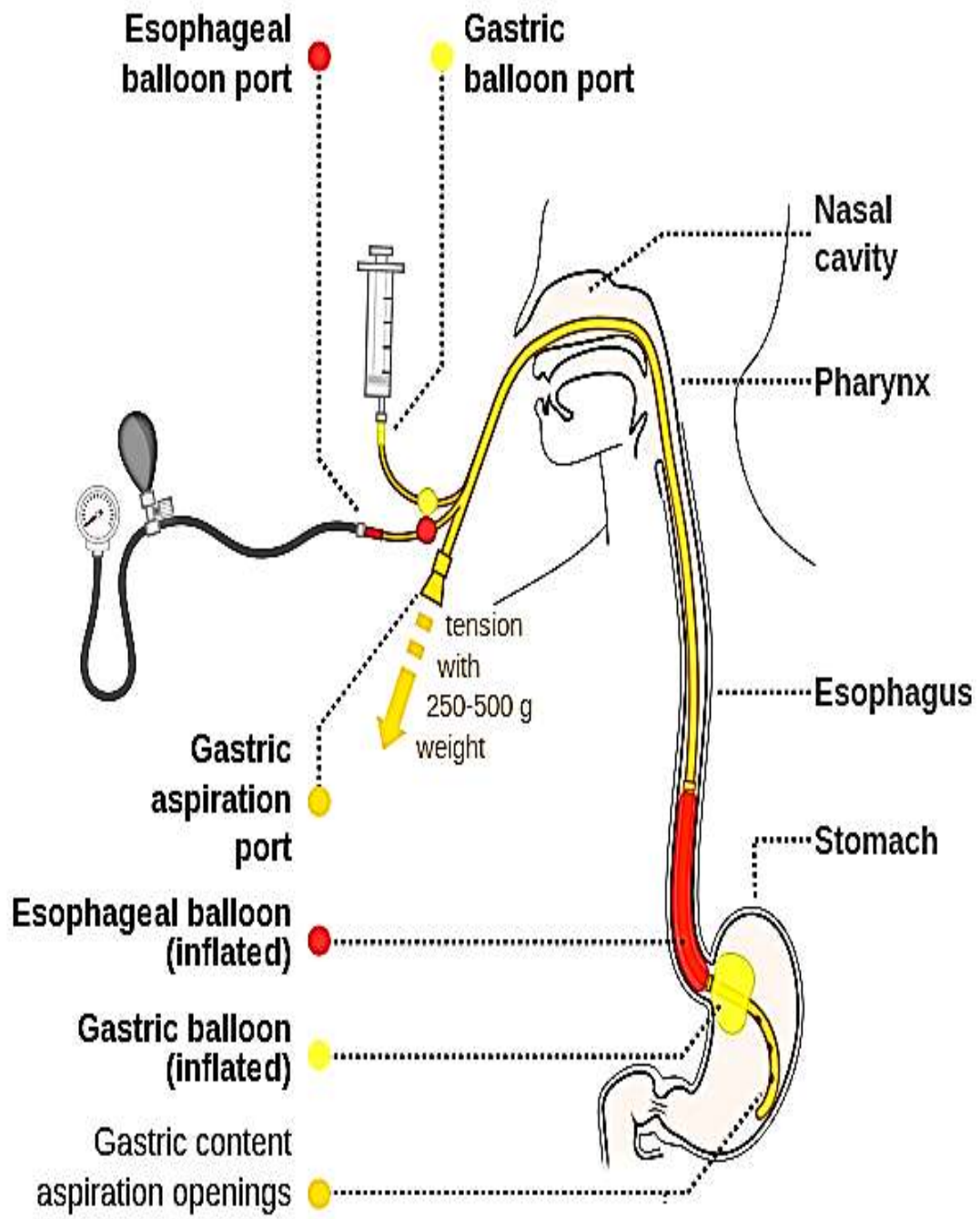
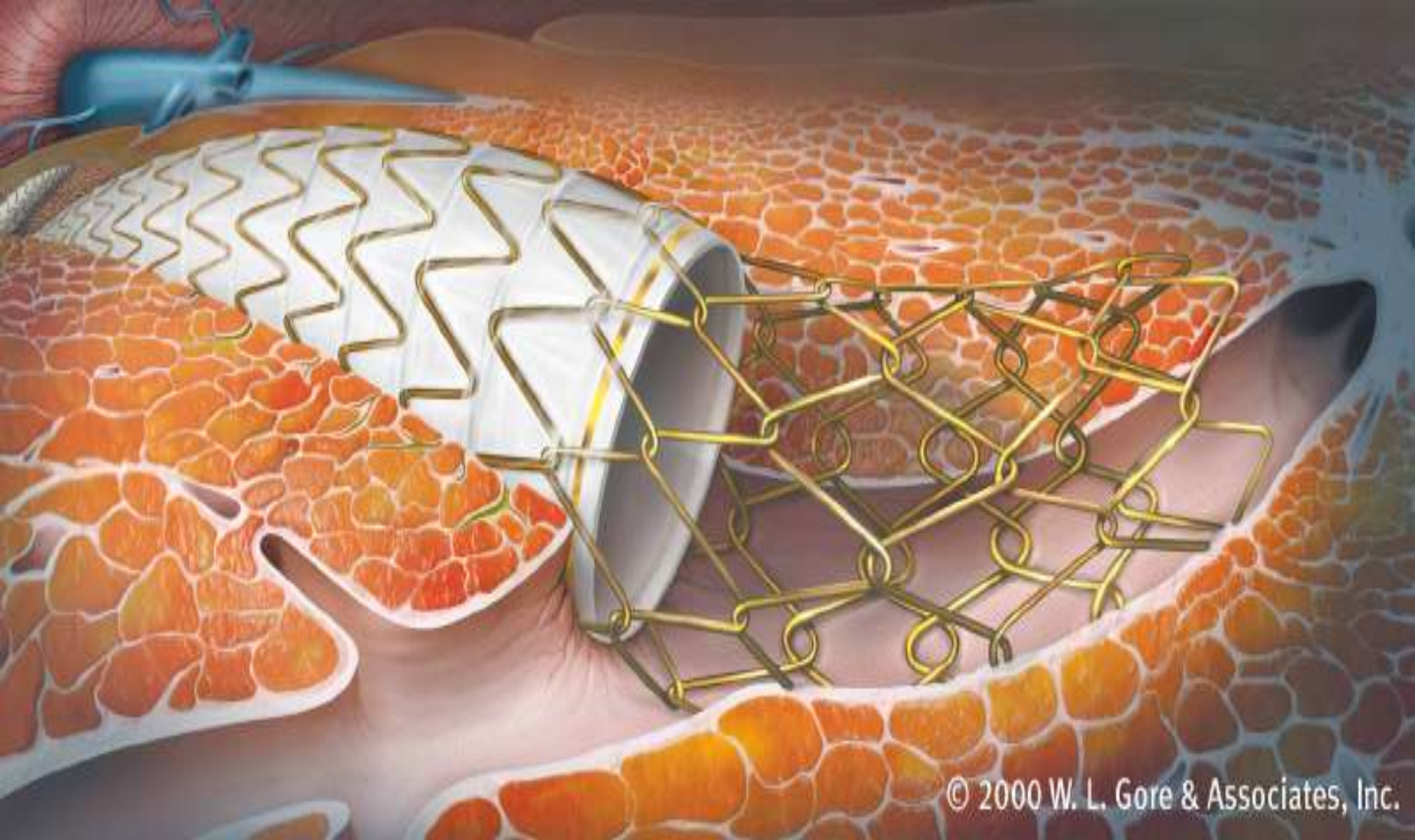


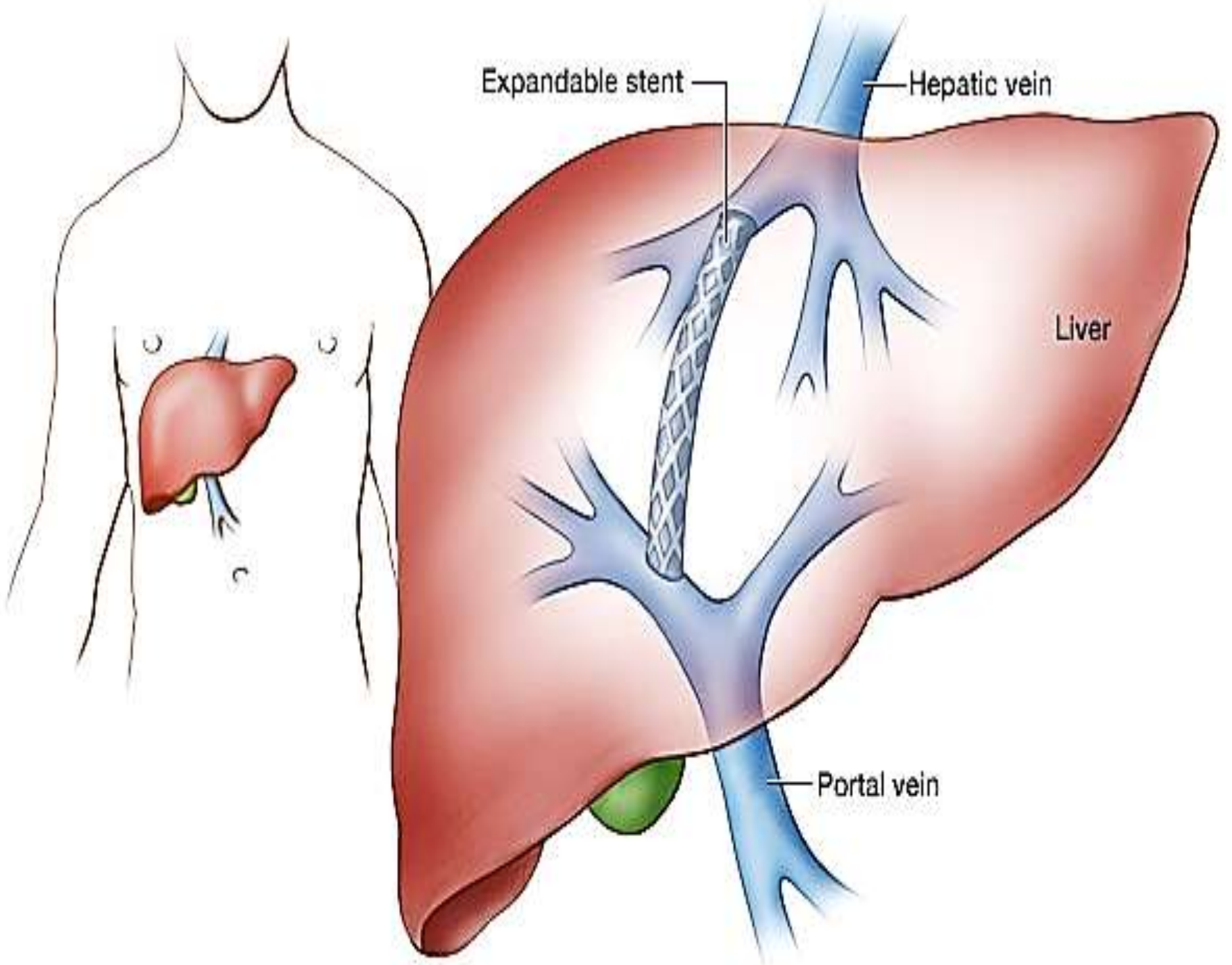
FIG. 1. The Sengstaken-Blakemore tube is in place with both balloons inflated. A nasogastric tube is placed through the contra-lateral external nares into a position just above the esophageal balloon.







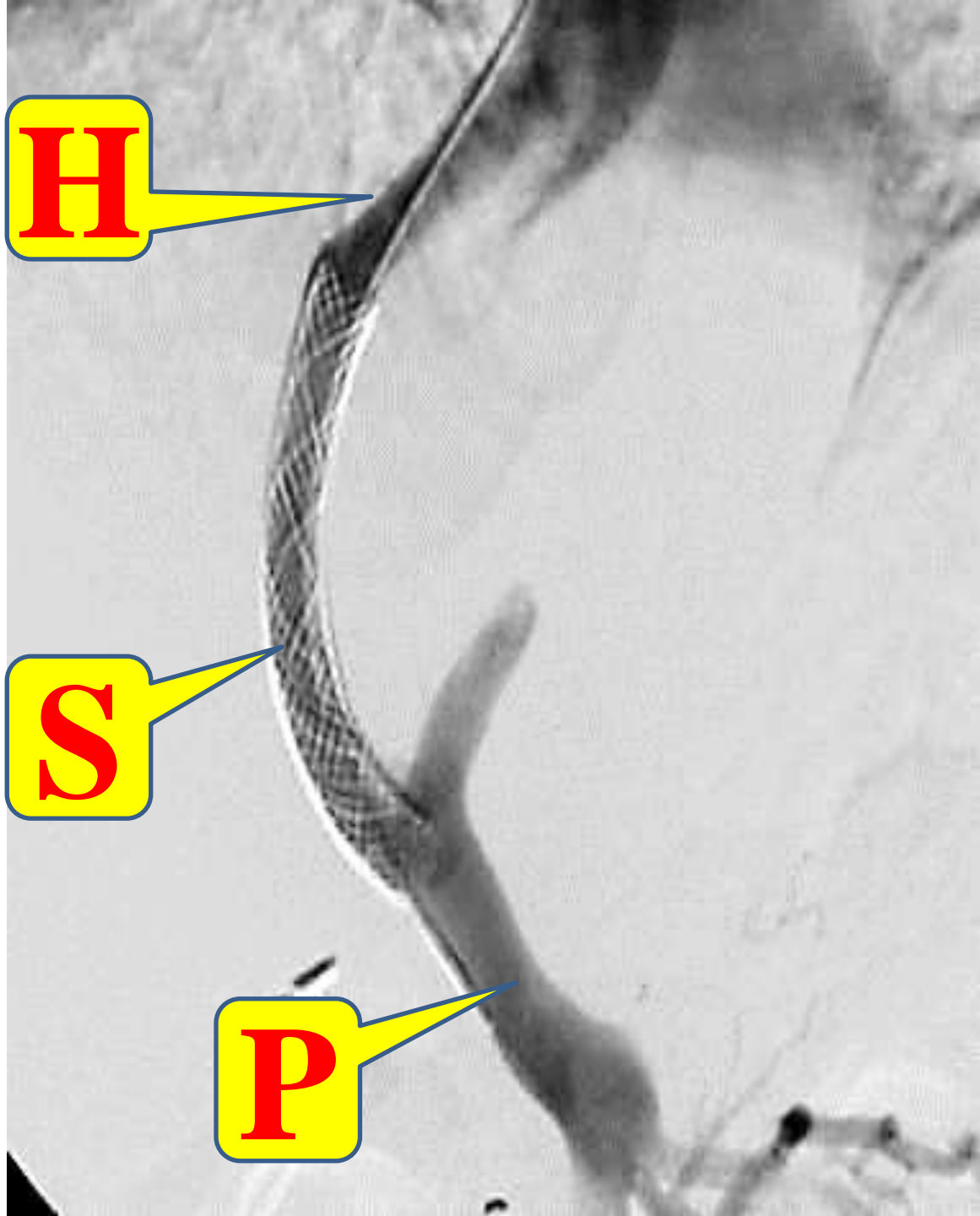
© 2000 W. L. Gore & Associates, Inc.

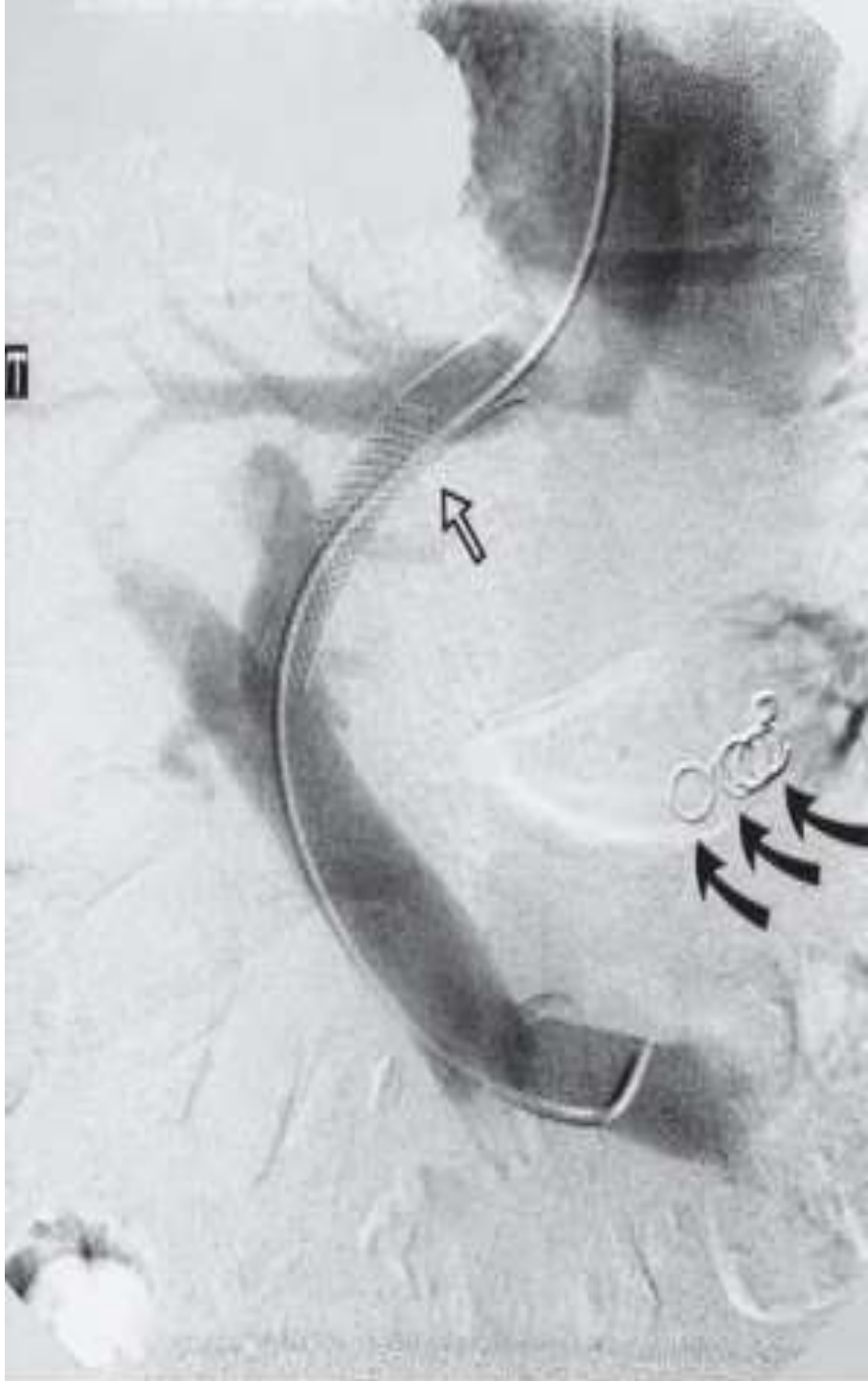


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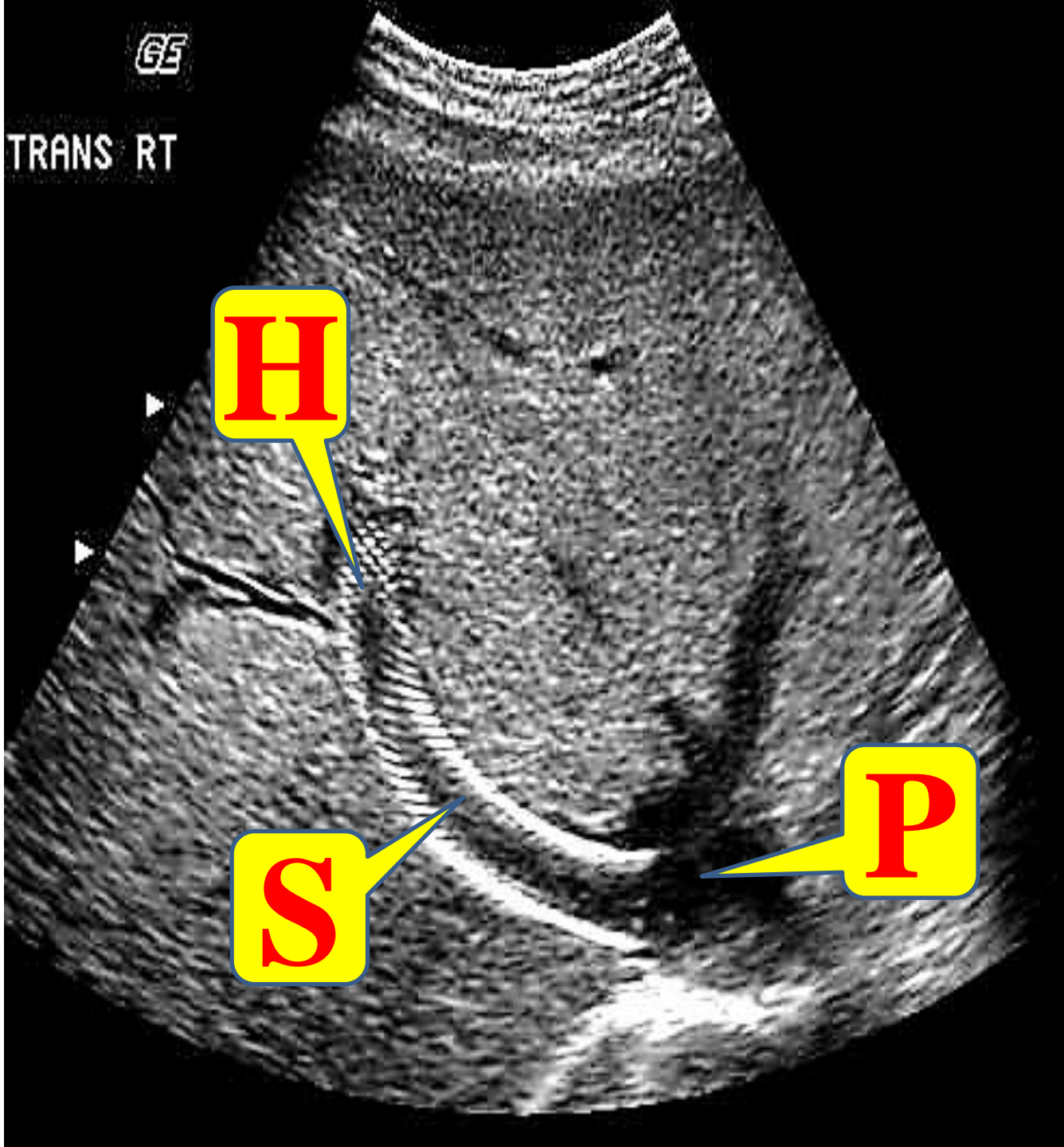
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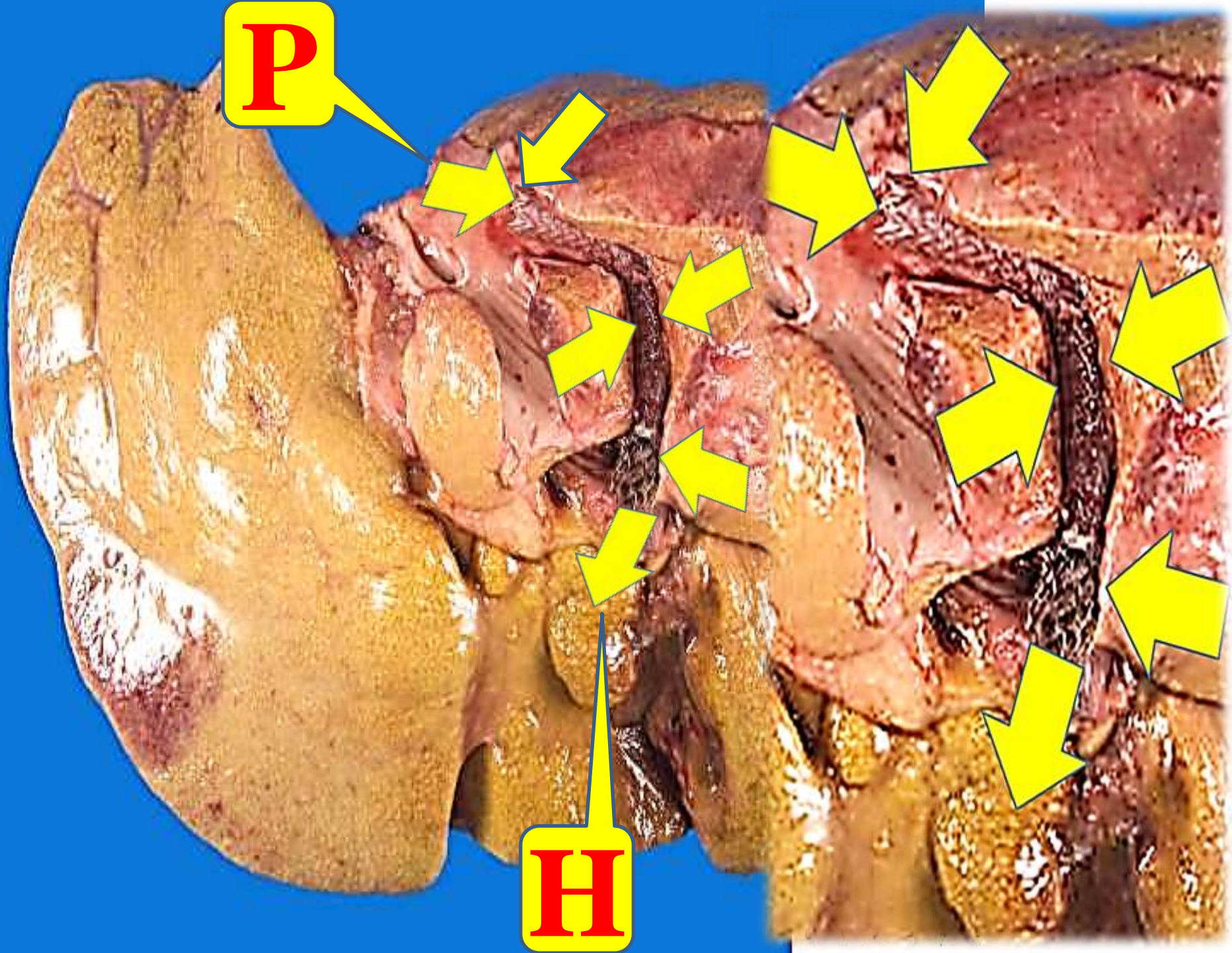
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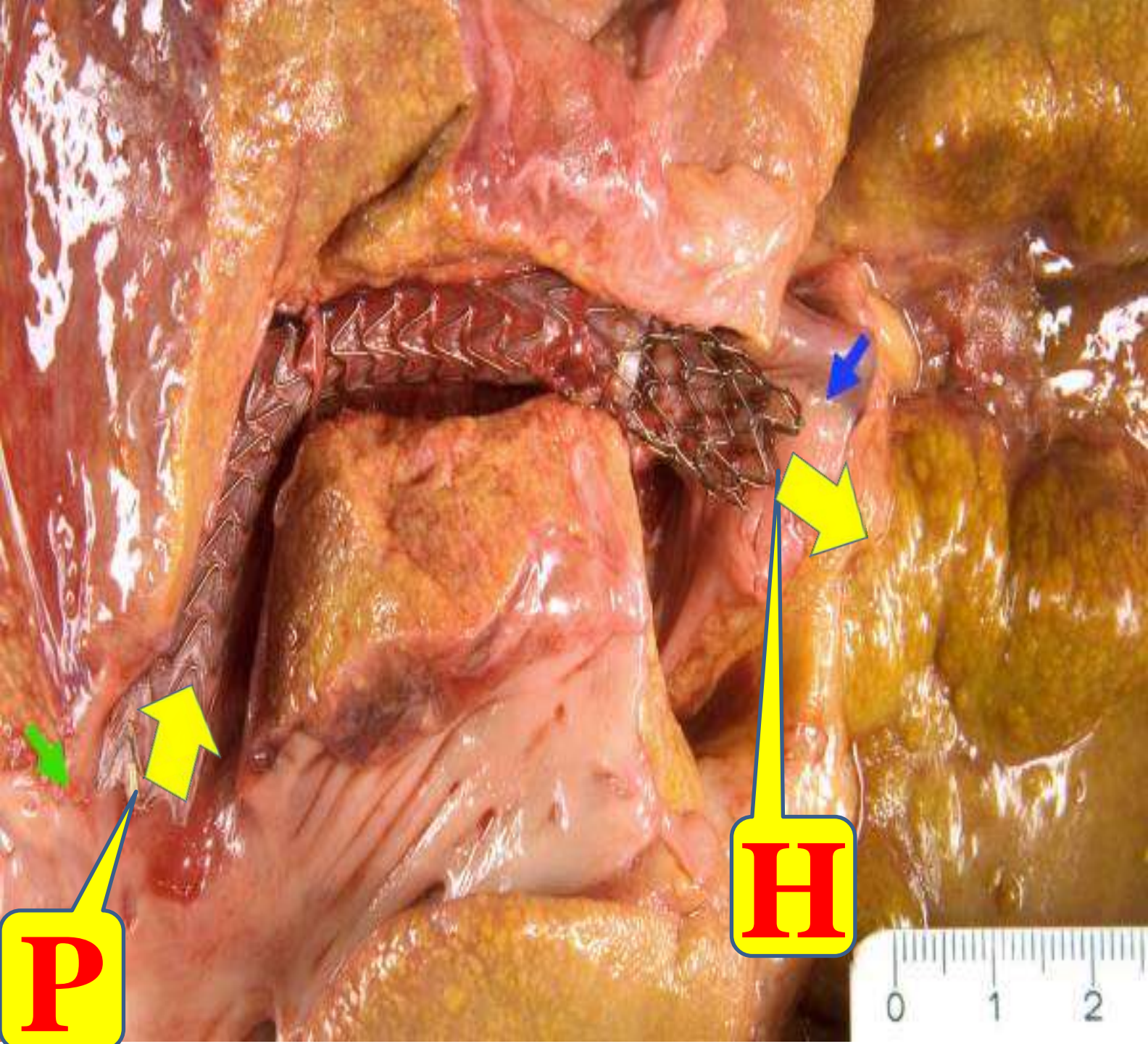
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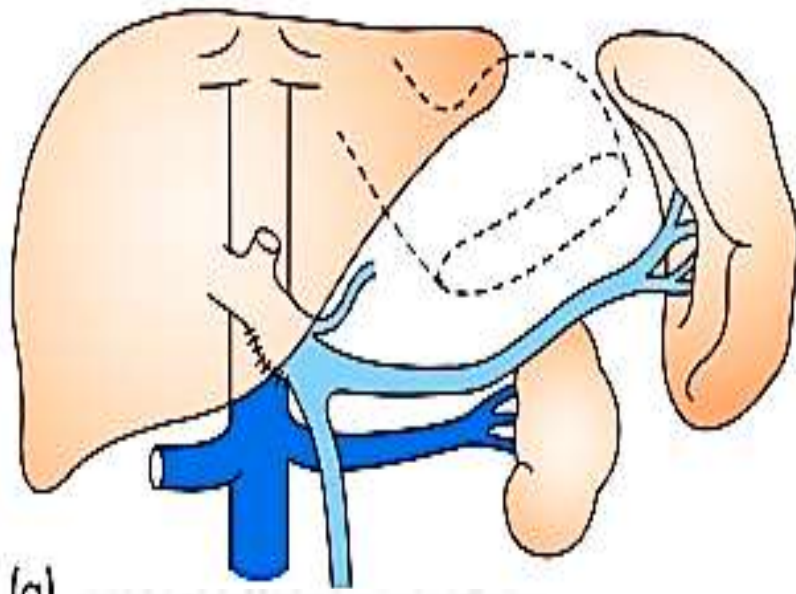


# Elective Surgery

- Porto-Systemic Shunt.
- Esophageal Transection ( obsolete ).
- Splenectomy and gastro-oesophageal devascularisation.
- Orthotopic liver transplantation.

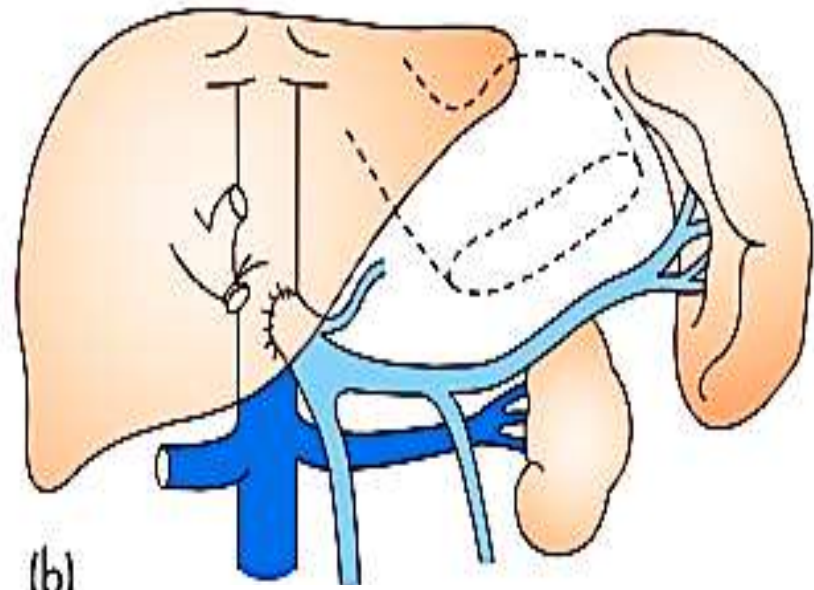
# Porto-Systemic Shunt.

- Surgical shunts are an effective method of preventing rebleeding from oesophageal or gastric varices, as they reduce the pressure in the portal circulation by diverting the blood into the low-pressure systemic circulation.
- Shunts may be divided into
- selective (e.g. splenorenal) and non-selective (e.g. portocaval).



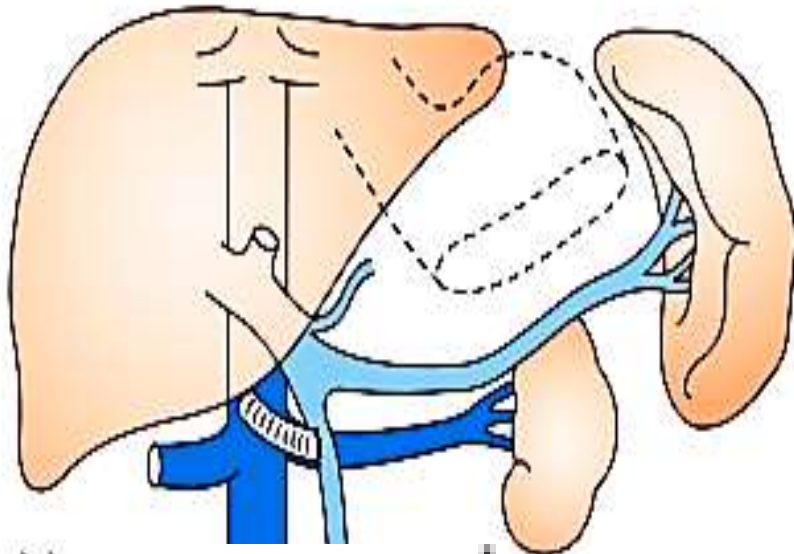
(a)

side-to-side



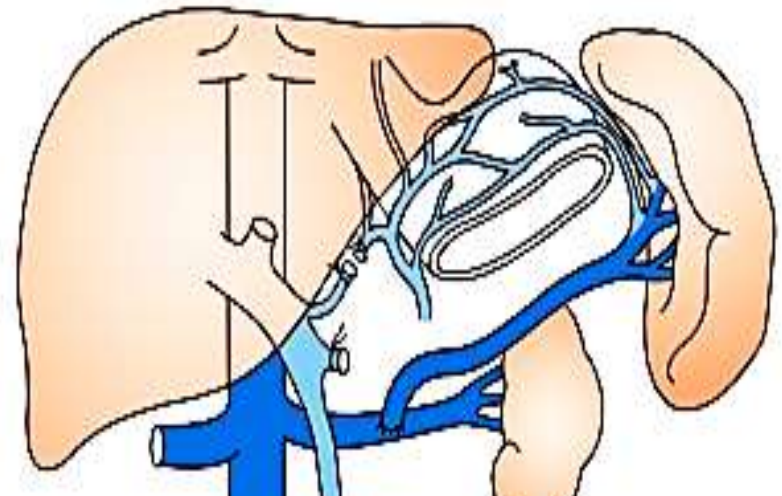
(b)

end-to-side



(c)

mesocaval

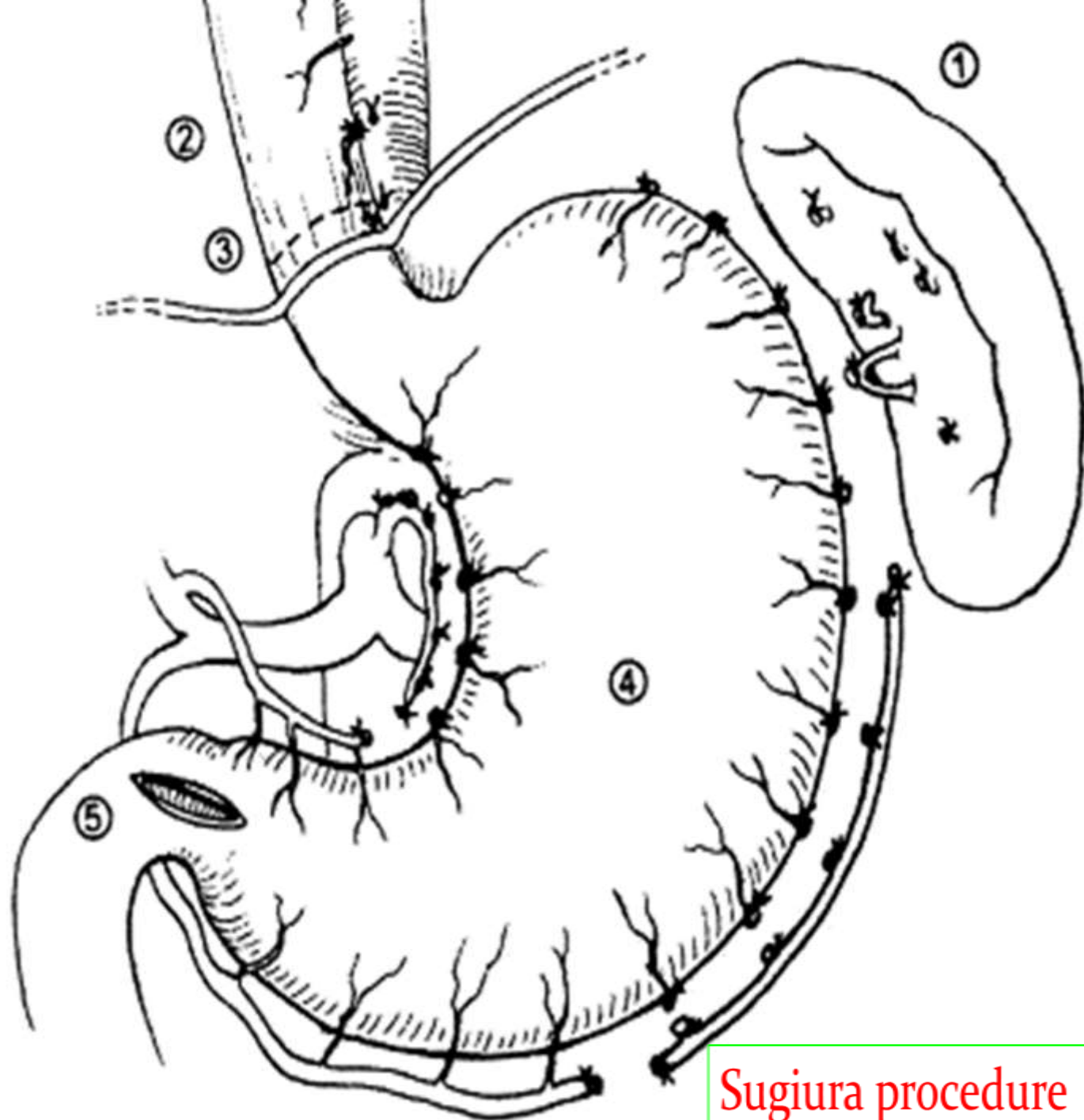


(d)

splenorenal

# **Splenectomy and gastro-oesophageal devascularisation.**

- **Sugiura's Operation.**
- **Splenic vein thrombosis may be seen secondary to chronic pancreatitis,**
- **and portal vein thrombosis is a common late complication of**
- **liver cirrhosis.**
- **It consists of a splenectomy, devascularization of the abdominal esophagus and cardia, and a selective vagotomy with pyloroplasty**



Sugiura procedure

- **Congenital abnormalities.**
- **Foreign bodies.**
- **Perforation( spontaneous Barotrauma ),Pathological,Penetrating injury, Foreign body,Instrumental ) (Chemical, Physical , mechanical and Ca.,.**
- **Mallory Weiss Syndrome.**
- **Corrosive Injury.**
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- **Crohn's disease.**
- **Plummer vinson disease ( Sideropenic Dysphagea ).**
- **Vascular abnormality.**
- **Varicose vein.**
- **Mediastinal fibrosis.**

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